30th CONGRESS, 2d Session. [HO. OF REPS.] MISCELLANEOUS. No. 48.

THIRD ANNUAL REPORT

OF THE

BOARD OF REGENTS

OF

THE SMITHSONIAN INSTITUTION,

TO

THE SENATE AND HOUSE OF REPRESENTATIVES,

SHOWING

THE OPERATIONS, EXPENDITURES, AND CONDITION OF THE INSTITUTION

DURING THE YEAR 1848.

FEBRUARY 19, 1849.
Laid upon the table, and ordered to be printed.

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OFFICERS AND MEMBERS OF THE SMITHSONIAN INSTITUTION:

THE PRESIDENT OF THE UNITED STATES,
Ex-officio Presiding Officer of the Institution.
THE VICE PRESIDENT OF THE UNITED STATES,
Ex-officio Second Presiding Officer.
GEORGE M. DALLAS,
Chancellor of the Institution.
JOSEPH HENRY,
Secretary of the Institution.
CHARLES C. JEWETT,
Assistant Secretary, acting as Librarian.
WILLIAM W. SEATON,
ALEXANDER D. BACHE,
JAMES A. PEARCE,
} *Executive Committee.*

REGENTS:

GEORGE M. DALLAS, *Vice President of the United States.*
ROGER B. TANEY, *Chief Justice of the United States.*
WILLIAM W. SEATON, *Mayor of the city of Washington.*
JAMES A. PEARCE, *Member of the Senate of the United States.*
JAMES M. MASON,* *Member of the Senate of the United States.*
JEFFERSON DAVIS, *Member of the Senate of the United States.*
HENRY W. HILLIARD, *Member of the House of Representatives.*
GEORGE P. MARSH, *Member of the House of Representatives.*
ROBERT MCCLELLAND, *Member of the House of Representatives.*
RUFUS CHOATE, *Citizen of Massachusetts.*
GIDEON HAWLEY, *Citizen of New York.*
WM. C. PRESTON, *Citizen of South Carolina.*
RICHARD RUSH, *Citizen of Pennsylvania.*
ALEXANDER D. BACHE, *Member of National Institute, Washington.*
JOSEPH G. TOTTEN, *Member of National Institute, Washington.*

MEMBERS EX-OFFICIO OF THE INSTITUTION:

JAMES K. POLK, *President of the United States.*
GEORGE M. DALLAS, *Vice President of the United States.*
JAMES BUCHANAN, *Secretary of State of the United States.*
ROBERT J. WALKER, *Secretary of the Treasury of the United States.*
WILLIAM L. MARCY, *Secretary of War of the United States.*
JOHN Y. MASON, *Secretary of the Navy of the United States.*
CAVE JOHNSON, *Postmaster General of the United States.*
ISAAC TOUCEY, *Attorney General of the United States.*
ROGER B. TANEY, *Chief Justice of the United States.*
EDMUND BURKE, *Commissioner of Patents of the United States.*
WILLIAM W. SEATON, *Mayor of the city of Washington.*

HONORARY MEMBERS OF THE INSTITUTION.

[No honorary members have yet been elected.]

* Appointed in place of Mr. Breese, resigned.

THIRD ANNUAL REPORT

OF

THE BOARD OF REGENTS

OF

THE SMITHSONIAN INSTITUTION,

SHOWING

The operations, expenditures, and condition of the Institution up to January 1st, 1849.

To the Senate and House of Representatives:

In obedience to the act of Congress establishing the Smithsonian Institution for the increase and diffusion of knowledge among men, the undersigned, in behalf of the Board of Regents of the Smithsonian Institution, submit to Congress, as a report of the operations, expenditures, and condition of the Institution, the following documents, viz:

1. Proceedings of the Board of Regents at their last session.
2. Annual report of the Secretary, giving an account of the operations of the Institution during the past year, accompanied by a report from the Assistant Secretary, relative to the library.
3. Report of the Executive Committee, exhibiting an account of the expenditures of the Institution, and of its financial condition on the 1st of January, 1849.
4. Report of the Building Committee relative to the progress made in the erection of the Smithsonian edifice, and in the improvement of the grounds, with a statement of the expenditures which have thus far been made on the same.

From these documents it will be seen that the Smithsonian Institution has already commenced its operations for the increase and diffusion of knowledge among men; that the plan of organization which has been adopted, and the works which have been completed and begun, have met with the approbation of men of eminence in literature and science both in this country and in Europe; that the Institution has received a valuable donation of chemical and philosophical apparatus from our distinguished countryman, Dr. Robert Hare, of Philadelphia, and that its financial affairs are in a very favorable condition.

From the report of the Building Committee it will be seen that the Smithsonian edifice is as far advanced as the financial arrangements which have been adopted would permit; that the two wings and connecting ranges will be ready for occupation early in the present year, and that the whole will be completed in three years from next March.

The report of the Executive Committee shows, that after all the expenditures for the erection of the building and the improvement of the

grounds, for the purchase of books and apparatus, for publications and researches, and for all other purposes, the value of the funds at the present time exceeds by a small amount that of the original appropriation of the act of Congress of September, 1846, establishing the Institution.

Respectfully submitted.

G. M. DALLAS,
Chancellor of the Smithsonian Institution.
JOSEPH HENRY,
Secretary of the Smithsonian Institution.

JOURNAL OF PROCEEDINGS

OF THE

REGENTS OF THE SMITHSONIAN INSTITUTION,

AT THEIR

THIRD ANNUAL MEETING.

WEDNESDAY, DECEMBER 13, 1848.

This being the day fixed by their resolutions of September 9, 1846, and of December 21, 1847, for their regular annual meeting, the Board of Regents of the Smithsonian Institution convened in the room of the Vice President of the United States, in the Capitol, at 12 o'clock, m.

Present, the Chancellor, Messrs. Bache, Breese, Davis, Hilliard, Marsh, McClelland, Pearce, Seaton, and Totten.

A quorum being present, and the Chancellor being obliged to leave in consequence of his duties in the Senate, Mr. Totten was called to the chair.

The Secretary stated to the meeting that Messrs. Choate and Hawley had been reappointed as regents to fill the vacancies occasioned by the expiration of their first term of service.

The Secretary also stated that he had sent telegraphic messages to Messrs. Choate and Hawley announcing their reappointment, and informing them that the board would probably transact no business for some days in order to give them an opportunity to be present.

Whereupon, on motion,

The board adjourned to meet on Monday, the 18th instant, at 11 o'clock, a. m.

MONDAY, DECEMBER 18, 1848.

The board met agreeably to adjournment.

Present, the Chancellor, Messrs. Bache, Davis, Marsh, McClelland, Pearce, Seaton, and Totten.

Mr. Seaton, from the Executive Committee, presented a report of the expenditures and state of the funds of the institution.

Mr. Totten, from the Building Committee, presented a report on the progress of erection of the Smithsonian edifice and improvements of the grounds, with estimates of future expenses, &c.

The Secretary presented his annual report of the operations of the Institution, accompanied by a report of the Assistant Secretary relative to the library.

On motion, it was

Resolved, That these several reports be recorded on the pages of the journal.

On motion,

The board adjourned to meet on Wednesday, the 20th instant, at 11 o'clock, a. m.

WEDNESDAY, DECEMBER 20, 1848.

The board met agreeably to adjournment.

Present, the Chancellor, Messrs. Bache, Breese, Davis, Marsh, Pearce, Seaton, and Totten.

On motion of Mr. Marsh, it was

Resolved, That the Secretary and Executive Committee be authorized to present to Messrs. Squier and Davis two hundred copies of their memoir contained in the first volume of the Smithsonian Contributions to Knowledge.

Mr. Marsh presented a letter from John R. Bartlett, of New York, accompanying a plan for the preparation of a new and improved dictionary of the English language, under the auspices of the Smithsonian Institution.

On motion, it was

Resolved, That the forementioned letter and plan be referred to the Secretary, the Executive Committee, and Mr. Marsh.

On motion of Mr. Marsh, it was

Resolved, That the Secretary be authorized to purchase, for the sum of one hundred and fifty dollars, the lithographic stones upon which are traced the designs for the first volume of the Smithsonian Contributions to Knowledge.

Mr. Seaton presented letters from several persons making application for employment in the institution.

The Secretary called the attention of the board to the statement made in his report relating to the valuable donation of apparatus, made to the institution by Dr. Robert Hare, of Philadelphia.

Whereupon, on motion of Mr. Seaton, it was unanimously

Resolved, That a committee be appointed, to consist of the Chancellor, Secretary, and Mr. Pearce, to communicate in suitable terms to Dr. Hare, the thanks of the Board of Regents for the munificent present of his extensive and very valuable apparatus to the Smithsonian Institution.

The Secretary stated to the board the progress made in the distribution of the first volume of the Smithsonian Contributions to Knowledge among colleges, learned societies, and large libraries; no copies having as yet been given to individuals.

The Secretary presented a list of donations to the Institution.

The Secretary also presented letters from several distinguished individuals highly approving the plan of the proposed *Bibliographia Americana*, mentioned in his report. (See appendix A.)

On motion, the board adjourned to meet on Wednesday, the 27th instant, at 11 o'clock, a. m.

WEDNESDAY, DECEMBER 27, 1848.

The board met agreeably to adjournment.

Present, Messrs. Bache, Davis, McClelland, Seaton, and Totten.

The Chancellor being absent, Mr. Davis was called to the chair.

The Secretary presented a letter from J. Disturnell, of New York city, accompanying a copy of a memorial to Congress relative to the preparation of a new Gazetteer of North America, which letter and memorial were referred to the Secretary and Executive Committee.

The Secretary also presented a letter from Francis Markoe, esq. of Washington, offering for sale to the Institution the collection of objects of natural history belonging to the estate of the late British minister to the United States, H. S. Fox, esq.,; which was referred to the Secretary and Executive Committee, it being understood that the financial arrangements of the board do not for the present allow the purchase of collections in natural history.

The Secretary also presented a letter from Archibald Campbell, esq., Deputy Secretary of the State of New York, accompanying a donation to the Institution, made in accordance with an act of the legislature of that State, of the 14 published volumes in 4to of the Natural History of New York.

On motion, the Chancellor and Secretary were requested to present the thanks of the Board of Regents for this valuable donation.

The Secretary also presented letters from several presidents of colleges; also reports from several learned societies, highly commending the programme of organization of the Institution.

Whereupon, it was

Resolved, That the Secretary be instructed to insert in the records of the Institution the names of all such individuals and societies.

On motion, it was

Resolved, That the Chancellor, Secretary, and Chairman of the Executive Committee be requested to prepare the annual report of the Regents to Congress, giving an account of the operations, expenditures and condition of the Institution.

On motion of Mr. McClelland, it was

Resolved, That the Secretary be requested to return the thanks of the Board of Regents to the Secretary of the Treasury of the United States, to the Secretary of the Navy, and to the Secretary of War for their assistance in promoting the objects of the Institution. Also, to the Hon. Mr. Irwin and Mr. Trist for their donations; and to Mr. Downs, of Philadelphia, for his computations of occultations.

At the request of Mr Seaton, the Executive Committee were allowed to withdraw their report, in order to enable them to include therein the disbursements and condition of the finances of the Institution up to the end of the year 1848.

At the request of Mr. Totten, permission was given to the Building Committee to withdraw their report for the purpose of making the same more complete.

On motion, it was

Resolved, That the board adjourn, to meet on Wednesday next, at 11 o'clock, a. m.

WEDNESDAY, JANUARY 3, 1849.

The board met agreeably to adjournment.

Present, the Chancellor, Messrs. Bache, Marsh, McClelland, Seaton and Totten; also, by invitation, Dr. Hare, of Philadelphia.

Mr. Seaton presented the revised report of the Executive Committee, which had been withdrawn for the purpose of extending the accounts up to the 1st January, 1849; which was accepted.

The Secretary read a letter from Dr. Hare, relative to the presentation of his apparatus to the Institution; which was ordered to be placed upon the journal. (See appendix B.)

Mr. Bache presented letters from J. Guillemard, esq., of Woodford, England, and from Professor Faraday, of London, concerning James Smithson; which were ordered to be preserved in the archives of the Institution.

Mr. Seaton, from the Building Committee, read a letter from Mr. Owen, late a Regent and Chairman of the Building Committee, relative to the publication of the work entitled "Hints on Public Architecture."

Whereupon, on motion, it was

Resolved, That the Building Committee be authorized, provided the same be required by the publishers, to transfer out of the appropriation originally made for experiments on building materials, a sum not exceeding two hundred dollars, to the appropriations heretofore made, for the publication of a volume on public architecture.

On motion of Mr. Seaton, the following appropriations, recommended by the Executive Committee for the service of the ensuing year, were taken up, considered, and adopted, viz:

For publication of "Contributions to Knowledge" - -	$3,000 00
Scientific researches and computations - -	700 00
Meteorological instruments and researches - -	1,000 00
Public lectures, &c. - - - - -	500 00
Publication of scientific reports - - -	500 00
Preparation of the general catalogue of American libraries - - - - - -	1,000 00
Purchase of bibliographical works and books of general reference - - - - - -	2,000 00
Binding, blank books, stamps, certificates, &c. -	250 00
Purchase of books needed by authors of reports, &c -	400 00
General expenses, including salaries of officers, expenses of the meetings of the board and of committees, clerk hire, postage, &c. - - - -	8,000 00
	17,350 00

On motion, it was

Resolved, That the Chancellor and the Secretary of the Smithsonian Institution be authorized to exchange the treasury notes belonging to the Institution for United States stock; that the certificates for the said stock be taken in the name of the Chancellor and Secretary, and that the stock and its proceeds be at the disposal of the same, under the regulations heretofore existing as to the treasury notes for the purposes of the Institution, in accordance with the several appropriations of the board.

On motion of Mr. Seaton, it was

Resolved, That the Secretary be authorized to appoint some suitable person, at a salary not to exceed four hundred dollars per aunum, to act as book-keeper and accountant of the Institution and to perform such other duties as are specified in the report of the Executive Committee.

The Secretary exhibited a copy of the last edition of Dr Hare's Chemistry, presented to the Institution by the author, containing illustrations of his apparatus now the property of the Institution, and mentioned that among the articles presented by Dr. Hare, were the blocks from which these illustrations were printed.

Whereupon, on motion of Mr. Bache, it was

Resolved, That the Secretary be requested to prepare for the use of the Institution, a descriptive catalogue of Dr. Hare's apparatus, illustrated by impressions from the original blocks.

On motion, the board adjourned to meet on Saturday next, at 10 o'clock, a. m.

SATURDAY, JANUARY 6, 1849.

The board met agreeably to adjournment.

Present, the Chancellor, Messrs. Bache, Davis, Hilliard, McClelland, Marsh, Pearce, Seaton, and Totten.

Mr. Totten presented the revised report of the Building Committee; which was accepted.

Mr. Hilliard read a letter from Mr. Squier, which was referred to the Secretary and Executive Committee.

On motion of Mr. Bache, it was

Resolved, That as the discharge of the duties assigned to the Assistant Secretary, acting as Librarian, are now such as to give entire employment to his time, he receive from the first instant the full compensation provided by the resolution of the board, adopted January 26, 1847.

On motion of Mr. Seaton, it was

Resolved, That when the board adjourn, it adjourn to meet on Wednesday, the 7th of March next, at 10 o'clock, a. m., in the Vice President's room in the Capitol, for the purpose of electing a Chancellor, in the place of Mr. Dallas, whose term of office as Regent expires on the 4th of March next.

The Assistant Secretary, acting as Librarian, read his report relative to the Library.

The board then, on motion, adjourned to meet on Wednesday, the 7th of March next.

SECOND ANNUAL REPORT OF THE SECRETARY OF THE SMITHSONIAN INSTITUTION, GIVING AN ACCOUNT OF THE OPERATIONS OF THE YEAR 1848. PRESENTED DECEMBER 13, 1849.

GENTLEMEN: By a resolution of the Board of Regents, at their last annual meeting, I was charged with the execution of the details of the programme, which had been provisionally adopted, and was directed to report annually to the board the progress made in the execution of the duty assigned to me. In accordance with this resolution I present the following statement of the operations of the past year.

The programme of the plan of organization of the institution has been submitted to a number of literary and scientific societies, and in every case has received their unqualified approbation. The principal officers of these societies have expressed a willingness to co-operate with the Smithsonian Institution in carrying out the plans which have been adopted, and it is confidently believed, that as soon as these are fully developed and brought into practical operation, they will meet with general approval.

It was recommended in my last report that the details of the plan should be adopted provisionally, and should be carried into operation gradually

and cautiously, with such changes from time to time, as experience might dictate. The Institution is not one of a day; but is designed to endure as long as our government shall exist, and it is therefore peculiarly important that in the beginning we should proceed carefully and not attempt to produce immediate effects at the expense of permanent usefulness. The process of increasing knowledge is an extremely slow one, and the value of the results of this part of the plan cannot be properly realized until some years have elapsed. Independently of these considerations, the financial arrangements adopted by the Board of Regents, are such as to prevent the full operation of the Institution until after three years from next March; up to that time more than one-half of the income is to be devoted to the erection of the building, and indirectly to the increase of the permanent fund.

It will be recollected that the programme embraces—

1st. The plan of publishing original memoirs on all branches of knowledge, in a series of quarto volumes.

2d. The institution of original researches under the direction of competent persons.

3d. The publication of a series of reports from year to year, giving an account of the progress of the different branches of knowledge.

4th. The formation of a library and a museum of objects of nature and art.

Publication of original memoirs.

The first volume of the Smithsonian Contributions to Knowledge has been published and partially distributed. It consists of a single memoir on the ancient monuments of the Mississippi valley, comprising the results of extensive original surveys and explorations by E. G. Squier, A. M., and E. H. Davis, M. D. It is illustrated by forty eight lithographic plates, and by two hundred and seven wood engravings. The mechanical execution of the volume will bear comparison with that of any publication ever issued from the American press.

In the publication of the first volume of the Contributions, the question occurred as to the propriety of securing the copyright to the Institution. I had not an opportunity of conferring with the Executive Committee on this point, and was therefore obliged to settle it on my own responsibility. I concluded that it would be more in accordance with the spirit of the institution to decide against the copyright. The knowledge which the Smithsonian Institution may be instrumental in presenting to the world should be free to all who are capable of using it. The republication of our papers ought to be considered as an evidence of their importance, and should be encouraged rather than prohibited.

The first memoir occupies an entire volume, and this accidental circumstance has given rise to a misconception of the plan. It has been supposed that each volume of the Smithsonian Contributions is in like manner to consist of a separate treatise on a particular subject selected with a view to popular interest. But such is not the case; each volume will generally contain a number of separate memoirs, on different branches of knowledge, similar to the usual published transactions of learned societies. The only reason why the first volume is occupied with a subject of general interest rather than one on some more abstruse branch of science is, that the

memoir it contains was the *first* which was presented of the character prescribed by the plan. No preference is to be given to any branch of knowledge. The only questions to be asked, in considering the acceptance of a memoir, are, whether it is a positive addition to knowledge, resting on original research, and of sufficient importance to merit a place in the Smithsonian Contributions.

The rules adopted for the acceptance of a memoir are the same as those generally followed by learned societies. The memoir is surrendered by the author to the Institution, and no additions or alterations are allowed to be made after it has been submitted to the commission appointed to examine it, unless by their consent. A certain number of copies is presented to the author for distribution, with the privilege of striking off, at his own expense, additional copies for sale; which in most cases, particularly when the memoir is of popular interest, will be all the remuneration expected by the author.

From what has been said, it will be evident that the papers published in the Contributions cannot generally be of a popular nature. The popular effects to be produced by the Institution are principally those which may be attained by the reports on the progress of the different branches of knowledge, and by the occasional publications in connexion with these of separate treatises on some subject of special interest.

Applications have been made for the first volume of the Contributions from many academies and private institutions, and were our means sufficient, we would be pleased to supply all demands of this kind. But this is obviously impossible, for they alone would exhaust all the income of the Institution.

Preparations have been made for the publication of the second volume of the Contributions, and a sufficient number of memoirs have been already accepted, or are in preparation, to furnish the materials. Five of these are on astronomical subjects, and afford as important additions to this science as have ever been made to it in this country. Two of them relate to investigations on the new planet Neptune, which are only second in value to the original discovery of this distant member of our system. Abstracts of these have been given to the world, and have been received with general approbation. A third is a determination of the zodiac of the asteroids, or the zone in the heavens to which the positions of these small planets are confined. This paper is of much practical importance in facilitating the researches now in progress in different parts of the world relative to the nature of these fragments (as they would seem to be) of a large planet between Jupiter and Mars. It may be at once determined, by an inspection of the table annexed to this paper, whether any star mapped in an old catalogue, and now no longer to be found in the same place, can possibly be one of the asteroids. A fourth paper is an account of a new comet, the discovery of which by an American lady is one of the first additions to science of this kind, so far as I am informed, ever made in this country. The fifth memoir is an account of the Georgetown Observatory, the instruments with which it is furnished, the mode of using them which has been adopted, and the results of the observations which have been made. An important paper is also in process of preparation for the same volume on the gigantic fossil cetacean remains which are found in the southern and western States of the Union.

Other papers are in progress which partake of the character of original researches, since they are in part at least prepared at the expense and un-

der the direction of the Smithsonian Institution. They will be mentioned under the next head.

In a few cases, memoirs have been presented which, though exhibiting research and considerable originality, are not of a character to warrant their adoption as parts of our volumes of Contributions to positive knowledge. The rule given in the programme has been rigidly adhered to, viz: to decline accepting any paper on physical science which consists merely of an unverified hypothesis, however ingenious and plausible such an hypothesis may be. A law of nature is not susceptible of a logical demonstration, like that of a proposition of geometry, but is proved by its fitness to explain old, and to predict new, phenomena. The verification of an hypothesis, as we have stated in the last report, consists in deducing consequences from it, and ascertaining by a direct appeal to observation or experiment, the truth or falsity of these deductions. Any paper, therefore, on material science which does not contain original experiments and observations cannot be admitted as a part of the Contributions to Knowledge. The rule we have adopted is in accordance with the practice of cautious investigators. The law of universal gravitation existed for several years in the mind of Newton as a well conditioned hypothesis, before it was given to the world as a verified and established theory. Besides this, the rules of logic which are employed in discussing the questions of ordinary life are not applicable to the precision of scientific inquiry. The materials in this case, to borrow an expression of an author of celebrity, "must be weighed in the scale of the assayer, and not like the mixed commodities of the market, on the weightbridge of common opinion and general usage."

It has been objected to our publishing original memoirs, that in so doing we are merely performing the duties of a learned society. The answer is, that the learned societies in this country have not the means, except in a very limited degree, of publishing memoirs which require expensive illustrations, much less of assisting to defray the cost of the investigations by which the results have been obtained. The real workingmen in the line of original research hail this part of the plan as a new era in the history of American science. The assistance which the Institution will thus render to original research, will occupy the place of the governmental patronage of other countries, and will enable true genius, wherever found, to place its productions before the world, free of cost, and in a manner most favorable for securing due attention and proper appreciation.

From our experience thus far, I am convinced that circumscribed as is the class of memoirs accepted by the Institution, we shall have no want of materials to fill at least one quarto volume a year. There has been in our country within the last few years a remarkable increase in the attention given to original research, not only in material science, but in every branch of knowledge susceptible of increase. And this is evinced by the character and variety of the papers which have been presented for publication. The wide difference between the increase of knowledge and its diffusion is beginning to be seen and appreciated, and the time is not far distant when we shall be as distinguished for our additions to science as for its diffusion and application. The revolutions of Europe are not only sending to our shores the choicest specimens of art, but also men of reputation and skill in scientific investigation. Besides this, the

present state of France is attended with such an interruption of the ordinary means of scientific publication, that the manuscript volumes on natural history of one of the most distinguished professors of the Jardin des Plantes are offered to us for publication in the Smithsonian Contributions for no remuneration, save a few copies for distribution among friends. Were the Institution fully in operation I should not hesitate, in accordance with the liberality which should characterise an establishment founded on the bequest of a foreigner, to recommend the adoption of these memoirs for publication at the expense of the institution, and perhaps we might now distribute them through several of our volumes and finish the publication of them in the course of a few years.

Original researches.

The second part of the plan consists in instituting original researches, the results of which are to be published, with the other memoirs, in the volumes of the Smithsonian Contributions. Under this head may be first mentioned the publication of the tables ordered at the last meeting of the board, for facilitating the calculation of the time of appearance of occultations of the fixed stars by the moon. The object of these tables is to assist in the accurate determination of the longitude of important places on the continent of North America, and their importance has been attested by the recommendation of some of the most distinguished astronomers of this country. The accurate establishment of the longitude of any place renders it a landmark to the surveyor, the geographer and the astronomer, and furnishes a most important element in determining its relative position on the map of the country. The observation of occultations affords one of the most ready means of solving this most difficult practical problem. The tables were calculated at the expense and under the direction of the Institution, and were sent to all persons known to be interested in practical astronomy, with a request that the observations which might be made in connexion with them might be sent to the Institution for computation, or published in some accessible journal. These tables have been so well received by astronomers, that with the concurrence of the Executive Committee, I have ventured to order the computation of a set of the same kind on a more extensive scale for the year 1849. Copies of these will be sent to United States officers on the coast of Oregon and California, and will be distributed among all the other observers in this country. They will be found of much practical importance to the corps engaged by the general government in establishing the boundary lines of our new possessions. It is hoped that the remuneration allowed for the labor of computing these tables will not be considered extravagant, when it is mentioned that it has occupied the whole time of Mr. Downes for nearly six months, at the rate of eight hours a day.

With the concurrence of the Executive Committee, I have also published an ephemeris of the planet Neptune, or in other words, a table indicating its position in the heavens during each day of the present year, by which those interested in astronomy are enabled readily to find the place of the new planet in the heavens, or the direction in which the telescope must be pointed in order to observe it. Copies of this have been sent to all the principal astronomers in the world, and it has received the highest commendation. It was calculated by Mr. S. C. Walker from the orbit

deduced by himself, a full account of which forms one of the papers of the second volume of the Contributions. It is the first accurate ephemeris which has ever appeared of this newly-discovered member of our solar system.

An appropriation of one thousand dollars was made at the last meeting of the board for the commencement of a series of meteorological observations, particularly with reference to the phenomena of American storms. According to the estimate of Prof. Loomis, appended to my last report, three thousand dollars will be required for the purpose of reducing this part of our plan to practice. It is hoped that one thousand dollars in addition will be appropriated this year, and an equal sum the next, so that, at the end of that time, we shall be prepared for full operation. At the last session of Congress an appropriation was made for meteorology under the direction of the Secretary of the Navy, and in order that the observations thus established may not interfere with those undertaken by the Smithsonian Institution, that officer has directed Prof. Espy to co-operate with the Secretary of the Institution.

It is contemplated to establish three classes of observers among those who are disposed to join in this enterprise. One class, without instruments, to observe the face of the sky as to its clearness, the extent of cloud, the direction and force of wind, the beginning and ending of rain, snow, &c. A second class, furnished with thermometers, who, besides making the observations above mentioned, will record variations of temperature. The third class, furnished with full sets of instruments, to observe all the elements at present deemed important in the science of meteorology. It is believed that much valuable information may be obtained in this way with reference to the extent, duration, and passage of storms over the country, though the observer may be possessed of no other apparatus than a simple wind vane.

With the instruments owned by private individuals, with those at the several military stations, and with the supply of the deficiency by the funds of the Smithsonian Institution, it is believed that observations can be instituted at important points over the whole United States, and that with the observations which we can procure from Mexico and the British possessions of North America, data will be furnished for important additions to our knowledge of meteorological phenomena. As a beginning to this extended system, six sets of instruments have been forwarded to the coast of Oregon and California, for the purpose of establishing periodical observations on the western side of the Rocky mountains. Also, a set has been forwarded to Bent's Fort, and another to Santa Fe. Circulars have been prepared and will shortly be issued for the purpose of ascertaining the number and locality of all those who, with or without instruments, are willing to join in the enterprise. I am indebted to Prof. Coffin, of Lafayette College, for a list of all persons, as far as they are known, who have heretofore been accustomed to make meteorological observations in North America, which will be of much importance in our future investigations relative to this subject.

As a part of the system of meteorology, it is proposed to employ, as far as our funds will permit, the magnetic telegraph in the investigation of atmospherical phenomena. By this means, not only the notice of the approach of a storm may be given to distant observers, but also the attention may be directed to particular phenomena, which can only be properly

studied by the simultaneous observations of persons widely separated from each other. For example, the several phases presented by a thunder-storm, or by the aurora borealis, may be telegraphed to a distance, and the synchronous appearances compared, and recorded in stations far re-removed from each other. Also, by the same means, a single observatory at which constant observations are made during the whole 24 hours, may give notice to all persons along the telegraphic lines, of the occurrence of interesting meteorological phenomena, and thus, simultaneous observations be secured. The advantage to agriculture and commerce to be derived from a knowledge of the approach of a storm by means of the telegraph, has been frequently referred to of late in the public journals. And this, we think, is a subject deserving the attention of the general government.

Under the head of researches, I may mention that several papers are in preparation, under the direction and partly at the expense of the Institution. The first of these relates to a series of valuable observations on the temperature and velocity of the Gulf stream, the author of which the science of our country was called to mourn while he was engaged in an important public service. The observations are now in progress of reduction, and the results will furnish an interesting memoir for the next volume of our Contributions.

The drawings and engravings of a paper on the botany of Oregon are also in progress, and as a small advance has been made to assist in completing these, the memoir will fall under the head of original researches, in part conducted by the Institution.

In the last report, it was mentioned that a magnetic survey of the mineral regions of the northern lakes had been added to the geological and mineralogical survey, the results of which were to be submitted to the Smithsonian Institution. An appropriation was made by the Secretary of the Treasury during the past summer for a continuation of this survey; but on account of the lateness of the season at which the arrangement was made, the person to whom the work was entrusted, was not enabled to engage in it this year. Operations, however, will probably be commenced as soon as practicable, next spring.

There is in the Land Office a large collection of facts relative to the variation of the compass, which have been derived from the observations of the public surveyors, who are directed in all cases to give the variation of the needle, from the true meridian, at the several stations of their surveys. The observations are made with an instrument called the solar compass, which probably gives the variation at each place within a quarter of a degree of the truth. The number of these observations, it is believed, will make up in a considerable degree for their want of greater precision, and from the whole, the lines of declination may be determined with considerable accuracy. The Secretary of the Treasury has liberally directed that all the matter relating to this subject in the land office may be placed at my disposal, and Mr. Wilson has undertaken to present the whole in a series of maps, the publication of which in the Contributions, cannot fail to be received as an interesting addition to terrestial magnetism.

Among the objects of research enumerated in the programme, is the analysis of soils and plants; but it is the policy of the Smithsonian Institution, in order to employ its funds most effectually in the way of increasing and diffusing knowledge, not to engage in any operation which could be as well if not better carried on under the direction and with the

funds of another institution. In accordance with this, an arrangement has been made with the Commissioner of Patents that the two institutions may not interfere with each other; and as, at the request of Mr. Burke, an appropriation has been made by Congress for a series of experiments on the above-mentioned subjects, the Smithsonian Institution will, therefore, for the present abandon this field of research for others less effectually occupied.

I may also mention in this connexion, that the Smithsonian Institution has been the means of starting an important literary enterprise, intended to facilitate the study of the history and literature of our country. Mr. Henry Stevens, who has been engaged for a number of years as the agent in this country of the British Museum, and other European libraries, has commenced the preparation of a bibliographical work, comprising a description of all books relative to, or published in America prior to the year 1700, and indicating not only the contents and value of the books, but also the principal libraries in this and other countries where they are to be found. The preparation of a work of this kind will be in accordance with that part of our plan which contemplates rendering the Institution a centre of bibliographical knowledge, and will have a direct influence in promoting the objects of the various historical societies which are now established in almost every State of the Union, and in bringing the Institution into friendly relations with them. A certificate has been given to Mr. Stevens to the effect that this work, if found, by a commission to whom it shall be referred, properly executed, will be accepted for publication as part of the Smithsonian Contributions to Knowledge. Assured by this certificate that the work will be properly executed, a number of gentlemen and institutions, whose libraries will be examined and referred to, have liberally subscribed to defray the necessary expense of its preparation. With with this encouragement, Mr. Stevens has started for Europe to commence investigations in foreign libraries. To satisfy ourselves as to the importance of a work of this kind, a circular letter was addressed to a number of individuals distinguished for their knowledge of such subjects, and the answer in all cases was highly favorable to the scheme. Some of these answers I have given in the appendix, together with the details of the plan of the work as proposed by Mr. Stevens.—(See appendix A.)

At the last session of Congress an appropriation of $5,000 was made, on motion of Mr. Stanton, for a series of astronomical observations in the southern hemisphere for the purpose of a new determination of the parallax of the planets, and consequently of their distance from the sun by simultaneous observations on the planets Venus and Mars, made at places situated north and south of the equator. This appropriation has been found inadequate to furnish all the instruments required, and inasmuch as the expedition should not be undertaken unless the observers are provided with all the aids which the latest improvements in modern science can furnish, and since, to wait for an additional appropriation from Congress would cause the delay of a whole year, Lieut. Gilliss has applied to the Institution to purchase and lend to him an achromaticte lescope, which, if not paid for by an additional appropriation from the government, will, after its return from the south, form part of the apparatus of the Institution. This instrument will cost about $2,000, to be paid at the end of three years. The Executive Committee, to whom I applied for counsel on this

subject, agreed with me in opinion, that this was a proper occasion for the application of the funds of the Institution to the promotion of science. The instrument has accordingly been ordered to be constructed by an American artist, and to be accepted only in case its performance shall meet the approval of a commission of practical astronomers appointed to examine it.

The position on the coast of Chili to be occupied by the southern observers, is peculiarly favorable to the study of the facts connected with one of the most mysterious and interesting phenomena of terrestrial physics—namely, the earthquake. Lieut. Gilliss has been requested to give particular attention to this subject, and for the purpose of facilitating his inquires a pseismometer, or instrument for measuring the intensity and direction of the *earthwave*, has been ordered at the expense of the Institution, to be placed in charge of the expedition during its absence. The cost of this instrument is not yet ascertained; it will, however, not exceed one hundred and fifty dollars.

I think it highly probable that these instruments will be paid for by the general government. The liberal spirit which dictated the original appropriation will, I doubt not, complete the outfit by the addition of a sum sufficient to defray all the necessary expenses.*

Under the head of original researches, I may recall to the Regents the fact of my having been directed to continue my own investigations on physical science, and to report occasionally to the Board my progress therein. In the course of last year, I found an opportunity while at Princeton, to commence a series of investigations on radiant heat, which apparently produced some results of interest, but which my subsequent engagements have prevented me from fully developing. I was also directed to cause to be made a series of experiments on the economical value of building material. It will give me much pleasure to obey this instruction of the Board as soon as a place in the Smithsonian building and the necessary apparatus are procured for properly conducting the research.

Reports on the progress af knowledge.

The Smithsonian Contributions are intended to consist of entirely original additions to the sum of human knowledge, and are to be principally exchanged for the transactions of learned societies, and to be distributed among public institutions. The reports, on the other hand, are to be of a more popular kind, and are intended for as wide a distribution as the funds of the Institution or the means of publishing them may permit. They will give an account of the progress of the different branches of knowledge in every part of the world, and will supply a desideratum in English literature.

The objects of the Smithsonian Institution are not educational. The press in our country already teems with elementary works on the different branches of knowledge, and to expend our funds in adding to these, would be to dissipate them without perceptible effect. Neither do we believe that the distribution of penny magazines, or tracts on the rudiments of science, can ever supersede the labors of the school-master. As a general rule, knowledge presented in a fragmentary form, can only be useful to minds well stored with general principles, to which the isolated facts may

* Since writing this report, the appropriation has been made by Congress.

be referred, and knowledge, both fragmentary and diluted, is almost worthless, even in the way of popular distribution. The elementary principles of science may be systematically taught to a certain extent in common schools, and the reports we intend to publish will be found of value to the teacher, and through him to the pupil, as well as interesting to the general reader. While these reports are rendered as free as possible from technical terms, they will treat of subjects requiring attention and thought to understand them. We think it better that they should be above, rather than below the average intelligence of the country; that they should start from a given epoch, and in most cases should be preceded by a brief exposition of the previous state of each subject.

Arrangements have been made for commencing some of these preliminary reports, as well as reports on the state of our knowledge of special subjects; among these are—

1. A report on the present state of chemistry as applied to agriculture.
2. A report on the forest trees of North America, giving their economical uses, their mode of propagation, and their history.
3. A report on the present state of our knowledge of lightning, and the best means of guarding against accidents from its effects.
4. A report on the late discoveries in astronomy.
5. A report on meteorological instruments, with practical observations and directions with reference to the use of them.

In connexion with this last report, I may mention that a proposition has been made to the Institution by Prof. Guyot, of the University of Neufchatel, relative to the importance of commencing at this epoch, and at the beginning of the labors of the Smithsonian Institution, the adoption of the centigrade scale of the thermometer. This is a subject, indeed, worthy of the attention of the Regents. It should, however, be discussed with caution, and be decided only after due deliberation.—(See appendix C.)

The first idea of reports on the progress of knowledge, with which we are acquainted, is due to the Emperor Napoleon, who called upon the French Academy of Science to present him with accounts of the progress of the different branches of knowledge within a given period. Until within the last few years the only regular reports of the kind were those presented to the Swedish Academy. Since that time, however, a series of annual reports on chemistry have been commenced by an association of gentlemen in France, and also a series on the different branches of material science, by the Physical Society of Berlin. The several numbers of the latter are now in progress of translation, in order to furnish in part the materials for the reports, to be prepared for the Smithsonian Institution during the coming year.

Although comparatively little has been done in our country in the way of original research, yet it might be important that the Institution should call for the preparation of a report on the history of the progress of original science in America down to the end of the present half century. This report would exhibit a constant increase in the number and importance of the researches made in our country, and might be found of much service in giving due credit to the labors of those who have been really engaged in the advance of knowledge among us. A report of this kind, however, would require the association of a number of persons combining literary with scientific attainments.

Occasional publication of separate treatises on subjects of general interest.

This part of the plan of organization requires to be carried into operation with much caution. It is liable to much abuse, unless the publication be confined to a narrow class of subjects, viz: to scientific reports on the present state of knowledge of a given subject, to precede the periodical reports, to translations from foreign languages of papers of general interest, and occasionally, perhaps, the exposition of a subject on which, at a particular time, popular knowledge is required. We should be careful not to establish a precedent which may lead us into difficulty, in the way of declining the publication of works which may be presented to us. Scarcely a week passes in which the Institution is not requested to publish some essay or compilation, and the funds which can be devoted to all our publications would not suffice for one-half of those offered of this kind. The only work of this class which has yet been attempted by the Institution, is one entitled "Hints on Public Architecture," under the direction of the Building Committee. Although the Secretary's name was mentioned in the resolution authorizing the publication of this treatise, yet he has thus far had no connexion with it. The publication was authorized before the details of the plan of organization were fully settled. It was at first intended merely as a report of the Building Committee, giving an account of the plans submitted, and the one adopted for the Smithsonian building, together with a report of the investigations of the committee with regard to the materials of construction, &c. It was afterwards changed into the form of a regular treatise in order that it might be referred to a commission of persons chosen to examine it, and that the Institution might thus be relieved from the responsibility of pronouncing upon its fitness for publication. I think it important that besides the preface of this work, a full account of its origin should be given in an introductory advertisement.

Library.

During the past year the library has continued to increase by donations, and by the books which have been deposited by publishers, in accordance with the 10th section of the Act establishing the Institution. The requirements of this Act are, however, not strictly observed by all publishers; and I would direct the attention of the board to a special report of the Assistant Secretary with reference to the point. The whole subject will probably come before Congress during its present session.

Prof. Jewett, the Assistant Secretary, has been industriously engaged during the past year in procuring statistics of the libraries in the United States, and in digesting plans for the details of the library of the institution, and I beg leave to refer you to the able and interesting report of the results of his labors, herewith submitted. A considerable portion of the copies of the Smithsonian Contributions will be presented to public institutions which publish transactions, and which are able to present us in return with additions to our library. The volume now in process of distribution has been preceded by a circular requesting exchanges of the works of all institutions which issue transactions and catalogues of all libraries to which the Contributions may be sent.

Preparation for lecturing.

The plan of organization contemplates a series of free lectures, particularly during the session of Congress. These will be commenced as soon as the building is ready for the purpose. This part of the plan also cannot be put into full operation until after the building is completed. A number of gentlemen have consented to favor us with their services. Men of talents, however, cannot be expected to leave their homes and subject themselves to the expense of visiting Washington, and to the trouble of preparing for a course of lectures without a proper remuneration. It will be necessary, therefore, that an annual appropriation be made for this purpose. The amount, however, must necessarily be small until the building is completed, or until all the interest of the fund can be devoted to the primary objects of the Institution. Besides this, the lecture-room in the east wing, now finished, will scarcely hold more than five hundred persons, while the one in the main building is intended to accommodate twice as many.

Donation.

Dr. Robert Hare, of Philadelphia, having resigned the chair of chemistry in the University of Pennsylvania, which he had filled with honor to himself and his country for nearly thirty years, has presented to the Smithsonian Institution the instruments of research and illustration, collected and used by himself during his long and successful scientific career. Many of these instruments are the invention of the donor, are connected with his reputation, and belong to the history of the science of our day. The gift is important, not only on account of its intrinsic value, but also as establishing a precedent of liberality, which we trust will be frequently observed by others, as well as being an expression of Dr. Hare's approbation of the plan and confidence in the stability of the Institution A number of other donations have been received, of which a list, with the names of the donors, will be given in the next report.

In view of what has been stated in the foregoing report, the Secretary trusts that the Board of Regents will be satisfied, if ever they had any doubts on the subject, that the plan adopted is one well calculated to carry out the benevolent intentions of the donor, of increasing and diffusing knowledge among men; and that a satisfactory answer has been given to the question frequently asked, namely, when is the Institution to begin? It will be seen that it has commenced the most important part of its operations, and the results are now in progress of dissemination in every part of the civilized world.

For convenience of reference, I have appended for republication the programme and its explanations, given in my last annual report.

Respectfully submitted,

JOSEPH HENRY,

Secretary of the Smithsonian Institution.

Programme of organization of the Smithsonian Institution, presented in the first Annual Report of the Secretary and adopted by the Board of Regents, December 13, 1847.

GENERAL CONSIDERATIONS WHICH SHOULD SERVE AS A GUIDE IN ADOPTING A PLAN OF ORGANIZATION.

1. WILL OF SMITHSON. The property is bequeathed to the United States of America, "to found at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men."

2. The bequest is for the benefit of mankind. The government of the United States is merely a trustee to carry out the design of the testator.

3. The Institution is not a national establishment, as is frequently supposed, but the establishment of an individual, and is to bear and perpetuate his name.

4. The objects of the Institution are—1st, to increase, and 2d, to diffuse knowledge among men.

5. These two objects should not be confounded with one another. The first is to increase the existing stock of knowledge by the addition of new truths; and the second to disseminate knowledge, thus increased, among men.

6. The will makes no restriction in favor of any particular kind of knowledge; hence all branches are entitled to a share of attention.

7. Knowledge can be increased by different methods of facilitating and promoting the discovery of new truths, and can be most efficiently diffused among men by means of the press.

8. To effect the greatest amount of good, the organization should be such as to enable the Institution to produce results in the way of increasing and diffusing knowledge, which cannot be produced by the existing institutions in our country.

9. The organization should also be such as can be adopted provisionally, can be easily reduced to practice, receive modifications, or be abandoned, in whole or in part, without a sacrifice of the funds.

10. In order to make up for the loss of time occasioned by the delay of eight years in establishing the Institution, a considerable portion of the interest which has accrued should be added to the principal.

11. In proportion to the wide field of knowledge to be cultivated, the funds are small. Economy should therefore be consulted in the construction of the building; and not only should the first cost of the edifice be considered, but also the continual expense of keeping it in repair, and of the support of the establishment necessarily connected with it. There should also be but few individuals permanently supported by the Institution.

12. The plan and dimensions of the building should be determined by the plan of organization, and not the converse.

13. It should be recollected that mankind in general are to be benefited by the bequest, and that, therefore, all unnecessary expenditure on local objects would be a perversion of the trust.

14. Besides the foregoing considerations, deduced immediately from the will of Smithson, regard must be had to certain requirements of the act of Congress establishing the Institution. These are a library, a museum, and a gallery of art, with a building on a liberal scale to contain them.

SECTION I.

Plan of organization of the institution, in accordance with the foregoing deductions from the will of Smithson.

To Increase Knowledge. It is proposed—

1. To stimulate men of talent to make original researches, by offering suitable rewards for memoirs containing new truths; and,

2. To appropriate annually a portion of the income for particular researches, under the direction of suitable persons.

To Diffuse Knowledge. It is proposed—

1. To publish a series of periodical reports on the progress of the different branches of knowledge; and,

2. To publish occasionally separate treatises on subjects of general interest.

DETAILS OF THE PLAN TO INCREASE KNOWLEDGE.

I. *By stimulating researches.*

1. Rewards, consisting of money, medals, &c., offered for original memoirs on all branches of knowledge.

2. The memoirs thus obtained to be published in a series of volumes, in a quarto form, and entitled "Smithsonian Contributions to Knowledge."

3. No memoir, on subjects of physical science, to be accepted for publication, which does not furnish a positive addition to human knowledge resting on original research; and all unverified speculations to be rejected.

4. Each memoir presented to the Institution to be submitted for examination to a commission of persons of reputation for learning in the branch to which the memoir pertains, and to be accepted for publication only in case the report of this commission is favorable.

5. The commission to be chosen by the officers of the Institution, and the name of the author, as far as practicable, concealed, unless a favorable decision be made.

6. The volumes of the memoirs to be exchanged for the transactions of literary and scientific societies, and copies to be given to all the colleges and principal libraries in this country. One part of the remaining copies may be offered for sale, and the other carefully preserved, to form complete sets of the volume, to supply the demand from new institutions.

7. An abstract, or popular account, of the contents of these memoirs to be given to the public through the annual report of the Regents to Congress.

II. *By appropriating a portion of the income, annually, to special objects of research, under the direction of suitable persons.*

1. The objects, and the amount appropriated, to be recommended by counsellors of the Institution.

2. Appropriations in different years to different objects; so that in course of time, each branch of knowledge may receive a share.

3. The results obtained from these appropriations to be published, with the memoirs before mentioned, in the volumes of the Smithsonian Contributions to Knowledge.

4. Examples of objects for which appropriations may be made.

(1.) System of extended meteorological observations, particularly with reference to the phenomena of American storms.

(2.) Explorations in descriptive natural history, and geological, magnetical, and topographical surveys, to collect materials for the formation of a Physical Atlas of the United States.

(3.) Solution of experimental problems, such as a new determination of the weight of the earth, of the velocity of electricity, and of light; chemical analyses of soils and plants; collection and publication of articles of science, accumulated in the offices of government.

(4.) Institution of statistical inquiries with reference to physical, moral, and political subjects.

(5.) Historical researches, and accurate surveys of places celebrated in American history.

(6.) Ethnological researches, particularly with reference to the different races of men in North America; also explorations and accurate surveys of the mounds and other remains of the ancient people of our country.

DETAILS OF THE PLAN FOR DIFFUSING KNOWLEDGE.

I. *By the publication of a series of reports, giving an account of the new discoveries in science, and of the changes made from year to year in all branches of knowledge not strictly professional.*

1. These reports will diffuse a kind of knowledge generally interesting, but which, at present, is inaccessible to the public. Some of the reports may be published annually, others at longer intervals, as the income of the Institution, or the changes in the branches of knowledge may indicate.

2. The reports are to be prepared by collaborators, eminent in the different branches of knowledge.

3. Each collaborator to be furnished with the journals and publications, domestic and foreign, necessary to the compilation of his report, to be paid a certain sum for his labors, and to be named on the title-page of the report.

(4.) The reports to be published in separate parts, so that persons interested in a particular branch can procure the parts relating to it, without purchasing the whole.

(5.) These reports may be presented to Congress, for partial distribution; the remaining copies to be given to literary and scientific institutions, and sold to individuals for a moderate price.

The following are some of the subjects which may be embraced in the reports.

I. PHYSICAL CLASS.

1. Physics, including astronomy, natural philosophy, chemistry, and meteorology.

2. Natural history, including botany, zoology, geology, &c.

3. Agriculture.

4. Application of science to arts.

II. MORAL AND POLITICAL CLASS.

5. Ethnology, including particular history, comparative philology, antiquities, &c.

6. Statistics and political economy.
7. Mental and moral philosophy.
8. A survey of the political events of the world, penal reform, &c.

III. LITERATURE AND THE FINE ARTS.

9. Modern literature.
10. The fine arts, and their application to the useful arts.
11. Bibliography.
12. Obituary notices of distinguished individuals.

II. *By the publication of separate treatises on subjects of general interest.*

1. These treatises may occasionally consist of valuable memoirs, translated from foreign languages, or of articles prepared under the direction of the Institution, or procured by offering premiums for the best exposition of a given subject.
2. The treatises should in all cases be submitted to a commission of competent judges previous to their publication.
3. As examples of these treatises, expositions may be obtained of the present state of the several branches of knowledge mentioned in the table of reports. Also of the following subjects, suggested by the Committee on Organization, viz: the statistics of labor, the productive arts of life, public instruction, &c.

SECTION II.

Plan of organization, in accordance with the terms of the resolutions of the Board of Regents, providing for the two modes of increasing and diffusing knowledge.

1. The act of Congress establishing the Institution contemplated the formation of a library and a museum; and the Board of Regents, including these objects in the plan of organization, resolved to divide the income into two equal parts.
2. One part to be appropriated to increase and diffuse knowledge by means of publications and researches, agreeably to the scheme before given. The other part to be appropriated to the formation of a library and a collection of objects of nature and of art.
3. These two plans are not incompatible with one another.
4. To carry out the plan before described, a library will be required, consisting, 1st, of a complete collection of the transactions and proceedings of all the learned societies in the world; 2d, of the more important current periodical publications, and other works necessary in preparing the periodical reports.
5. The Institution should make special collections, particularly of objects to verify its own publications.
6. Also a collection of instruments of research in all branches of experimental science.
7. With reference to the collection of books, other than those mentioned above, catalogues of all the different libraries in the United States should be procured, in order that the valuable books first purchased may be such as are not to be found in the United States.

8. Also catalogues of memoirs, and of books in foreign libraries, and other materials, should be collected for rendering the institution a centre of bibliographical knowledge, whence the student may be directed to any work which he may require.

9. It is believed that the collections in natural history will increase by donation, as rapidly as the income of the Institution can make provision for their reception, and therefore it will seldom be necessary to purchase any articles of this kind.

10. Attempts should be made to procure for the gallery of arts casts of the most celebrated articles of ancient and modern sculpture.

11. The arts may be encouraged by providing a room, free of expense, for the exhibition of the objects of the Art-Union and other similar societies.

12. A small appropriation should annually be made for models of antiquities, such as those of the remains of ancient temples, &c.

13. For the present, or until the building is fully completed, besides the Secretary, no permanent assistant will be required, except one, to act as librarian.

14. The duty of the Secretary will be the general superintendence, with the advice of the Chancellor and other members of the establishment, of the literary and scientific operations of the institution; to give to the Regents annually an account of all the transactions; of the memoirs which have been received for publication; of the researches which have been made; and to edit, with the assistance of the librarian, the publications of the Institution.

15. The duty of the Assistant Secretary, acting as librarian, will be, for the present, to assist in taking charge of the collections, to select and purchase, under the direction of the Secretary and a committee of the board, books and catalogues, and to procure the information before mentioned; to give information on plans of libraries, and to assist the Secretary in editing the publications of the Institution, and in the other duties of his office.

16. The Secretary and his assistants, during the session of Congress, will be required to illustrate new discoveries in science, and to exhibit new objects of art; also, distinguished individuals should be invited to give lectures on subjects of general interest.

17. When the building is completed, and when, in accordance with the act of Congress, the charge of the National Museum is given to the Smithsonian Institution, other assistants will be required.

Explanations and illustrations of the programme.

The programme embraces the general propositions adopted by the Board of Regents at their last meeting, as the basis of future operations. It is intended to harmonize the two modes of increasing and diffusing knowledge, and to give to the Institution the widest influence compatible with its limited income. That all the propositions will meet with general approval cannot be expected; and that this organization is the best that could be devised is neither asserted nor believed. To produce *a priori* a plan of organization which shall be found to succeed perfectly in practice, and require no amendment, would be difficult under the most favorable circumstances, and becomes almost impossible where conflicting opinions are to be harmonized, and the definite requirements of the act establishing

the Institution are to be observed. It is not intended that the details of the organization, as given in the programme, should be permanently adopted without careful trial; they are rather presented as suggestions to be adopted provisionally, and to be carried into operation gradually and cautiously, with such changes, from time to time, as experience may dictate.

That the Institution is not a national establishment, in the sense in which institutions dependent on the government for support are so, must be evident when it is recollected that the money was not absolutely given to the United States, but intrusted to it for a special object, namely: the establishment of an institution for the benefit of men, to bear the name of the donor, and, consequently, to reflect upon his memory the honor of all the good which may be accomplished by means of the bequest. The operations of the Smithsonian Institution ought, therefore, to be mingled as little as possible with those of the government, and its funds should be applied exclusively and faithfully to the increase and diffusion of knowledge among men.

That the bequest is intended for the benefit of men in general, and that its influence ought not to be restricted to a single district, or even nation, may be inferred not only from the words of the will, but also from the character of Smithson himself; and I beg leave to quote from a scrap of paper in his own hand, the following sentiment bearing on this point: "The man of science has no country; the world is his country—all men, his countrymen." The origin of the funds, the bequest of a foreigner, should also preclude the adoption of a plan which does not, in the words of Mr. Adams, "spread the benefits to be derived from the Institution not only over the whole surface of this Union, but throughout the civilized world." "Mr. Smithson's reason for fixing the seat of his Institution at Washington obviously was, that *there* is the seat of government of the United States, and *there* the Congress by whose legislation, and the Executive through whose agency, the trust committed to the honor, intelligence, and good faith of the nation, is to be fulfilled." The centre of operations being permanently fixed at Washington, the character of this city for literature and science will be the more highly exalted in proportion as the influence of the Institution is more widely diffused.

That the terms *increase* and *diffusion* of knowledge are logically distinct, and should be literally interpreted with reference to the will, must be evident when we reflect that they are used in a definite sense, and not as mere synonymes, by all who are engaged in the pursuits to which Smithson devoted his life. In England there are two classes of institutions, founded on the two ideas conveyed by these terms. The Royal Society, the Astronomical, the Geological, the Statistical, the Antiquarian Societies, all have for their object the increase of knowledge; while the London Institution, the Mechanics' Institution, the Surry Institution, the Society for the Diffusion of Religious Knowledge, the Society for the Diffusion of Useful Knowledge, are all intended to diffuse or disseminate knowledge among men. In our own country, also, the same distinction is observed in the use of the terms by men of science. Our colleges, academies, and common schools, are recognized as institutions partially intended for the diffusion of knowledge, while the express object of some of our scientific societies is the promotion of the discovery of new truths.

The will makes no restriction in favor of any particular kind of knowl-

edge; though propositions have been frequently made for devoting the funds exclusively to the promotion of certain branches of science having more immediate application to the practical arts of life, and the adoption of these propositions has been urged on the ground of the conformity of such objects to the pursuits of Smithson; but an examination of his writings will show that he excluded from his own studies no branch of general knowledge, and that he was fully impressed with the important philosophical fact, that all subjects of human thought relate to one great system of truth. To restrict, therefore, the operations of the institution to a single science or art, would do injustice to the character of the donor, as well as to the cause of general knowledge. If preference is to be given to any branches of research, it should be to the higher, and apparently more abstract; to the discovery of new principles, rather than of isolated facts. And this is true even in a practical point of view. Agriculture would have forever remained an empirical art, had it not been for the light shed upon it by the atomic theory of chemistry; and incomparably more is to be expected as to its future advancement from the perfection of the microscope, than from improvements in the ordinary instruments of husbandry.

The plan of increasing and diffusing knowledge, presented in the first section of the programme, will be found in strict accordance with the several propositions deduced from the will of Smithson, and given in the introduction. It embraces, as a leading feature, the design of interesting the greatest number of individuals in the operations of the Institution, and of spreading its influence as widely as possible. It forms an active organization, exciting all to make original researches who are gifted with the necessary power, and diffusing a kind of knowledge, now only accessible to the few, among all those who are willing to receive it. In this country, though many excel in the application of science to the practical arts of life, few devote themselves to the continued labor and patient thought necessary to the discovery and development of new truths. The principal cause of this want of attention to original research, is the want, not of proper means, but of proper encouragement. The publication of original memoirs and periodical reports, as contemplated by the programme, will act as a powerful stimulus on the latent talent of our country, by placing in bold relief the real laborers in the field of original research, while it will afford the best materials for the use of those engaged in the diffusion of knowledge.

The advantages which will accrue from the plan of publishing the volumes of the Smithsonian Contributions to Knowledge, are various. In the first place, it will serve to render the name of the founder favorably known wherever literature and science are cultivated, and to keep it in continual remembrance with each succeeding volume, as long as knowledge is valued. A single new truth, first given to the world through these volumes, will forever stamp their character as a work of reference. The contributions will thus form the most befitting monument to perpetuate the name of one whose life was devoted to the increase of knowledge, and whose ruling passion, strong in death, prompted the noble bequest intended to facilitate the labors of others in the same pursuit.

Again, the publication of a series of volumes of original memoirs will afford to the institution the most ready means of entering into friendly relations and correspondence with all the learned societies in the world, and of enriching its library with their current transactions and proceedings.

But perhaps the most important effect of the plan will be that of giving to the world many valuable memoirs, which, on account of the expense of the illustrations, could not be otherwise published. Every one who adds new and important truths to the existing stock of knowledge, must be of necessity, to a certain degree, in advance of his age. Hence the number of readers and purchasers of a work is generally in the inverse ratio of its intrinsic value; and consequently, authors of the highest rank of merit are frequently deterred from giving their productions to the world on account of the pecuniary loss to which the publication would subject them. When our lamented countryman, Bowditch, contemplated publishing his commentary on La Place, he assembled his family and informed them that the execution of this design would sacrifice one-third of his fortune, and that it was proper his heirs should be consulted on the subject which so nearly concerned them. The answer was worthy of the children of such a father: "We value," said they, "your reputation more than your money." Fortunately, in this instance, the means of making such a sacrifice existed; otherwise one of the proudest monuments of American science could not have been given to the world. In a majority of cases, however, those who are most capable of extending human knowledge are least able to incur the expense of the publication. Wilson, the American Ornithologist, states, in a letter to Michaux, that he has sacrificed everything to publish his work: "I have issued," he says, "six volumes, and am engaged on the seventh, but as yet I have not received a single cent of the proceeds." In an address on the subject of natural history, by one of our most active cultivators of this branch of knowledge, we find the following remarks, which are directly in point: "Few are acquainted with the fact that from the small number of scientific works sold, and the great expense of plates, our naturalists not only are not paid for their labors, but suffer pecuniary loss from their publications. Several works on different branches of zoology, now in course of publication, will leave their authors loses to an aggregate amount of $15,000. I do not include in this estimate works already finished—one, for instance, the best contribution to the natural history of man extant, the publication of which will occasion its accomplished author a loss of several thousand dollars. A naturalist is extremely fortunate it he can dispose of 200 copies of an illustrated work, and the number of copies printed rarely exceeds 250." It may be said that these authors have their reward in the reputation which they thus purchase; but reputation should be the result of the talents and labor expended in the production of a work, and should not in the least depend upon the fact that the author is able to make a pecuniary sacrifice in giving the account of his discoveries to the public.

Besides the advantage to the author of having his memoir published in the Smithsonian Contributions free of expense, his labors will be given to the world with the stamp of approval of a commission of learned men, and his merits will be generally made known through the reports of the institution. Though the premiums offered may be small, yet they will have considerable effect in producing original articles. Fifty or a hundred dollars awarded to the author of an original paper, will, in many instances, suffice to supply the books, or to pay for the materials, or the manual labor required, in prosecuting the research.

There is one proposition of the programme which has given rise to much discussion, and which, therefore, requires particular explanation; I allude

to that which excludes from the contributions all papers consisting merely of unverified speculations on subjects of physical science. The object of this proposition is to obviate the endless difficulties which would occur in rejecting papers of an unphilosophical character; and though it may in some cases exclude an interesting communication, yet the strict observance of it will be found of so much practical importance that it cannot be dispensed with. It has been supposed, from the adoption of this proposition, that we are disposed to undervalue abstract speculations: on the contrary, we know that all the advances in true science—namely, a knowledge of the laws of phenomena—are made by provisionally adopting well-conditioned hypotheses, the product of the imagination, and subsequently verifying them by an appeal to experiment and observation. Every new hypothesis of scientific value must not only furnish an exact explanation of known facts, but must also enable us to predict, in kind and quantity, the phenomena which will be exhibited under any given combination of circumstances. Thus, in the case of the undulatory hypothesis of light, it was inferred, as a logical consequence, that if the supposition were true that light consisted of waves of an ethereal medium, then two rays of light, like two waves of water under certain conditions, should annihilate each other, and darkness be produced. The experiment was tried, and the anticipated result was obtained. It is this exact agreement of the deduction with the actual result of experience that constitutes the verification of an hypothesis, and which alone entitles it to the name of a theory, and to a place in the transactions of a scientific institution. It must be recollected that it is much easier to speculate than to investigate, and that very few of all the hypotheses imagined are capable of standing the test of scientific verification.

For the practical working of the plan for obtaining the character of a memoir, and the precaution taken before it is accepted for publication, I would refer* to the correspondence relative to the memoir now in process of publication by the institution. The memoir was referred to the American Ethnological Society, with a request that a committee of its members might be appointed to examine and report on its character, as to fitness for publication in the Smithsonian Contributions to Knowledge. On the favorable report of this committee, and on the responsibility of the society, the memoir was accepted for publication.

As it is not our intention to interfere with the proceedings of other institutions, but to co-operate with them, so far as our respective operations are compatible, communications may be referred to learned societies for inspection, as in the case of the above mentioned memoir, and abstracts of them given to the world through the bulletins of these societies, while the details of the memoirs and their expensive illustrations are published in the volumes of the Smithsonian Contributions. The officers of several learned societies in this country have expressed a willingness to co-operate in this way.

Since original research is the most direct means of increasing knowledge, it can scarcely be doubted that a part of the income of the bequest should be appropriated to this purpose, provided suitable persons can be found, and their labors be directed to proper objects. The number, however, of those who are capable of discovering scientific principles is comparatively

* See first volume of the Smithsonian Contributions.

small; like the poet, they are "born, not made," and, like him, must be left to choose their own subject, and wait the fitting time of inspiration. In case a person of this class has fallen on a vein of discovery, and is pursuing it with success, the better plan will be to grant him a small sum of money to carry on his investigation, provided they are considered worthy of assistance by competent judges. This will have the double effect of encouraging him in the pursuit, and of facilitating his progress. The Institution, however, need not depend upon cases of this kind, even if they were more numerous than they are, for the application of its funds in the line of original research. There are large fields of observation and experiment, the cultivation of which, though it may afford no prospect of the discovery of a principle, can hardly fail to produce results of importance both in a practical and a theoretic point of view. As an illustration of this remark, I may mention the case of the investigations made a few years ago by committees of the Franklin Institute, of Philadelphia. The Secretary of the Treasury of the United States placed at the disposal of this society a sum of money, for the purpose of making experiments with reference to the cause of the explosion of steam-boilers. A committee of the society was chosen for this purpose, which adopted the ingenious plan of writing to all persons in the United States engaged in the application of steam, and particularly to those who had observed the explosion of a steam-boiler. In this way opinions and suggestions in great variety, as to the cause of explosions, were obtained. The most plausible of these were submitted to the test of experiment: the results obtained were highly important, and are to be found favorably mentioned in every systematic work on the subject of steam which has appeared, in any language, within the last few years. New and important facts were established; and, what was almost of as much consequence, errors which had usurped the place of truth were dethroned.

In the programme, examples are given of a few subjects of original research to which the attention of the Institution may be turned. I will mention one in this place, which, in connexion with the contents of our first memoir, may deserve immediate attention. I allude to a small appropriation made annually for researches with reference to the remains of the ancient inhabitants of our country. This is a highly interesting field, and what is done in regard to it should be done quickly. Every year the progress of civilization is obliterating the ancient mounds, cities and villages are rising on the spots they have so long occupied undisturbed, and the distinctive marks of these remains are every year becoming less and less legible.

In carrying out the spirit of the plan adopted, namely, that of affecting men in general by the operations of the Institution, it is evident that the principal means of diffusing knowledge must be the *press*. Though lectures should be given in the city in which Smithson has seen fit to direct the establishment of his Institution, yet, as a plan of general diffusion of knowledge, the system of lectures would be entirely inadequate; every village in our extended country would have a right to demand a share of the benefit, and the income of the institution would be insufficient to supply a thousandth part of the demand. It is also evident that the knowledge diffused should, if possible, not only embrace all branches of general interest, so that each reader might find a subject suited to his taste, but also that it should differ in kind and quality from that which can be readily obtained through the cheap publications of the day. These conditions will be fully

complied with in the publications of the series of reports proposed in the programme. A series of periodicals of this kind, posting up all the discoveries in science from time to time, and giving a well digested account of all the important changes in the different branches of knowledge, is a desideratum in the English language. The idea is borrowed from a partial plan of this kind in operation in Sweden and Germany; and for an example of what the work should be, I would refer to the annual report to the Swedish Academy of its perpetual secretary, Berzelius, on physical science. The reports can be so prepared so as to be highly interesting to the general reader, and at the same time of great importance to the exclusive cultivator of a particular branch of knowledge. Full references should be given, in footnotes, to the page, number or volume of the work from which the information was obtained, and where a more detailed account can be found. It is scarcely necessary to remark, that the preparation of these reports should be intrusted only to persons profoundly acquainted with the subjects to which they relate—namely, to those who are devoted to particular branches, while they possess a knowledge of general principles. Sufficient explanations should be introduced to render the report intelligible to the general reader, without destroying its scientific character. Occasionally reports may be obtained from abroad—as, for example, accounts of the progress of certain branches of knowledge in foreign countries—and these may be translated, if necessary, and incorporated into other reports, by some competent person in this country.

Besides the reports on the progress of knowledge, the programme proposes to publish occasionally brief treatises on particular subjects. There are always subjects of general interest, of which brief expositions would be of much value. The preparation of these, however, should be intrusted to none but persons of character and reputation, and should be subjected to a revision by competent and responsible judges before they are given to the public. They may be presented in the form of reports on the existing state of knowledge relative to a given subject, and may sometimes consist of memoirs and expositions of particular branches of literature and science, translated from foreign languages. The reports and treatises of the institution, sold at a price barely sufficient to pay the expense of printing, will find their way into every school in our country, and will be used not as first lessons for the pupil, but as sources of reliable information for the teacher.

The second section of the programme gives, so far as they have been made out, the details of the part of the plan of organization directed by the act of Congress establishing the Institution. The two plans, namely, that of publication and original research, and that of collections of objects of nature and art, are not incompatible, and may be carried on harmoniously with each other. The only effect which they will have on one another is that of limiting the operation of each, on account of the funds given to the other. Still, with a judicious application, and an economical expenditure of the income, and particularly by rigidly observing the plan of finance, suggested by Dr. Bache, in the construction of the building, much good may be effected in each of the two branches of the institution. To carry on the operations of the first, a working library will be required, consisting of the past volumes of the transactions and proceedings of all the learned societies in every language. These are the original sources from which the most important principles of the positive knowledge of our day have

been drawn. We shall also require a collection of the most important current literature and science for the use of the collaborators of the reports; most of these, however, will be procured in exchange for the publications of the Institution, and therefore will draw but little from the library fund. For other suggestions relative to the details of the library, I would refer to the report of the assistant secretary, acting as librarian.

The collections of the Institution, as far as possible, should consist of such articles as are not elsewhere to be found in this country, so that the visitors at Washington may see new objects, and the spirit of the plan be kept up, of interesting the greatest possible number of individuals. A general collection of all objects of nature and of art properly arranged and deposited in one place, would form a museum of the highest interest; but the portion of the income of the bequest which can be devoted to the increase and maintenance of the museum, will be too small to warrant any attempt towards an indiscriminate collection. It is hoped that in due time other means may be found of establishing and supporting a general collection of objects of nature and art at the seat of the general government, with funds not derived from the Smithsonian bequest. For the present, it should be the object of the Institution to confine the application of the funds, first, to such collections as will tend to facilitate the study of the memoirs which may be published in the Contributions, and to establish their correctness; secondly, to the purchase of such objects as are not generally known in this country, in the way of art, and the illustration of antiquities, such as models of buildings, &c.; and thirdly, to the formation of a collection of instruments of physical research, which will be required both in the illustration of new physical truths, and in the scientific investigations undertaken by the institution.

Much popular interest may be awakened in favor of the institution at Washington, by throwing the rooms of the building open, on stated evenings during the session of Congress, for literary and scientific assemblies, after the manner of the weekly meetings of the Royal Institution in London. At these meetings, without the formality of a regular lecture, new truth in science may be illustrated, and new objects of art exhibited. Besides these, courses of lectures may be given on particular subjects by the officers of the Institution, or by distinguished individuals invited for the purpose.

Respectfully submitted.

JOSEPH HENRY,
Secretary of the Smithsonian Institution.

REPORT OF THE ASSISTANT SECRETARY RELATIVE TO THE LIBRARY.—PRESENTED DECEMBER 13, 1848.

To the Secretary of the Smithsonian Institution:

SIR: At the last meeting of the Board of Regents the following duties were assigned to me for the year which is about to close, viz:

1. "The preparation of catalogues of books suitable for the commencement of the library, in accordance with the plan of organization adopted by the Board of Regents.

2. "The purchase of the more necessary works on bibliography.

3. "The collection and systematic arrangement for purposes of comparison of the printed catalogues of the principal libraries throughout the United States, together with information with regard to the expenditures, plans of increase, and other particulars relating to said libraries.

4. "The collection of works to which the institution may be entitled under the tenth section of the act establishing the Institution."

The first of these duties which demanded my attention after the adjournment of the Board of Regents, was the collection of the works to which the institution is entitled by the tenth section of the charter. After examining the subject carefully, I made a special report thereon to the Secretary and Library Committee, a copy of which is herewith submitted.

The next subject to which I devoted my attention was the gathering of information respecting public libraries in the United States. It is a singular, and to us a mortifying fact, that the most accurate account of American libraries was published in Germany, and has never been translated into English. In 1845,-'6 there appeared in the "Serapeum,*" a journal published at Leipzig, a series of articles upon bibliography and libraries in the United States. These articles, forming about ninety pages octavo, were written by Hermann E. Ludewig, formerly of Dresden, at present a lawyer in the city of New York. Having a strong predilection for bibliographical pursuits, he collected, during a journey which he performed through the United States, all the information within his reach respecting the libraries, public and private, the book trade, and the bibliography of the general and local history of the country. The results of his researches have been given to the public in the articles to which I have already referred, and in an 8vo. volume of 180 pages, published for private distribution, entitled "The Literature of American Local History; a Bibliographical Essay; New York, 1846." The fullness and accuracy of the details which he has given are remarkable. I have made free use of them, and have found my labors much facilitated by so doing.

I have, besides, visited and examined many of the principal libraries. I have also prepared, for the purpose of eliciting further information, a circular letter to librarians, a copy of which accompanies this report. This letter was distributed together with the first volume of our "Contri-

* Serapeum. Zeitschrift für Bibliothekwissenschaft, Handschriftenkunde, und aeltere Literatur. Heraus. von Dr. Robert Naumann, Leipzig, T. O. Weigel, 1840 ff. (See 1845, pp. 209—224, and 1846, pp. 113—172, 177—190, 190—192, 204—206.)

butions to Knowledge." I regret that the answers to the queries have not all been received, so that I am unable at present to offer a full report respecting them. The most important statistics have, however, been obtained. These are presented in an accompanying document. I beg leave here to offer some important deductions from the facts contained in this paper.

The aggregate number of volumes in the public libraries of the United States is about 1,294,000. These are distributed among 182 libraries. Forty-three of these libraries contain over 10,000 volumes each; nine over 20,000 each; and only two over 50,000. The library of Harvard University, the largest this side the Atlantic, contains, together with the libraries of the law school and divinity school, upwards of 70,000 volumes.

These statements enable us to institute an instructive comparison between our libraries and those of the principal nations of Europe. It should be premised, however, that it is a very difficult thing to procure exact statistics of libraries. With reference to France, Germany, Belgium, Russia, and Spain, we are in possession of comparatively accurate returns. With respect to Great Britain, Holland, Sweden, Denmark, and Norway, those which I give below are as accurate as I could procure, though certainly not very satisfactory. I am not acquainted with any book which gives a good account of the present condition of libraries in several of these countries except one,* to which I have not had access. For greater convenience of reference and comparison, I present these statistics in a tabular form.

The first column of the table gives the name of the country.

The second, the year to which the statistics relate.

The third, the number of public libraries.

By public libraries are not meant those exclusively which are opened to the public without restriction, but rather those belonging to public institutions, and which are accessible under proper regulations to persons who wish to consult them for literary purposes.

The fourth column contains the aggregate number of volumes in the libraries.

The fifth gives the number of libraries containing over 10,000 volumes each.

The sixth, the average number of volumes in libraries containing over 10,000 volumes each.

The seventh, the number of volumes in the largest library of each country.

The eighth, the number of volumes to every million of inhabitants.

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*I allude to the Archiv der Gesellschaft für aeltere deutsche Geschitskunde. Herausg. v. G. H. Pertz. Bd. 8. Hannov, Hahn, 1843, 8°. Petzholdt in the Anzeiger für Literatur der Bibliothekwissenschaft for 1843, terms this an almost inexhaustible source of information on European Libraries.

NOTE.—Since writing the above, I have received the volume alluded to. The information which it contains, though fully justifying the expression of Petzholdt, relates principally to the manuscript treasures of the libraries, and is not of a statistical character.

Since the report was prepared, I have seen in the *Serapeum*, a translation of parts of an article containing a statistical account of libraries in Europe and America, first published in the Journal of the Statistical Society of London, by Edward Edwards, esq., of the British Museum. The original article I have not as yet been able to procure. It appears to have been prepared with great care and a wide examination of authorities. It would doubtless have saved me much laborious research had I seen it before writing my report.

Comparative statistics of libraries in Germany, France, Great Britain, Russia, United States of America, Denmark, Belgium, Sweden, Spain, and Norway.

Name of the country.	Date of statistics.	No. of libraries.	Aggregate number of volumes.	No. of libraries with over ten thousand volumes.	Average size of libraries of over ten thousand volumes.	No. of volumes in the largest libraries.	Comparative number of books to the population. No. to every million inhabitants.
Germany, including Austria and Switzerland - - - -	1845	103	5,578,980	68	80,000	600,000	136,072
France - - - -	1844	241	4,771,000	121	35,000	800,000	145,000
Great Britain - - - -	1840	31	2,001,000	23	85,000	420,000	83,000
Russia - - - -	1843	120	1,321,115	16	69,000	464,000	28,000
United States of America - -	1847	182	1,294,000	43	17,000	70,000	64,000
Denmark - - - -	1840	13	660,000	5	123,000	400,000	330,000
Belgium - - - -	1841	31	614,722	16	35,000	100,000	153,000
Sweden - - - -	1841	16	358,000	7	43,000	150,000	120,000
Spain - - - -	1835	21	354,557	5	57,000	200,000	30,000
Norway - - - -	1842	14	157,783	2	74,000	126,000	150,000

This table enables us to estimate at a glance, and with a good degree of accuracy the relative value of the public provisions made in Europe and America for general intellectual culture, as well as of those for the most extensive scientific and literary research.

It will be seen that in the *number of public libraries*, France is the only country in the world which excels us. It should be observed that the returns respecting France are official and minute, including libraries of not more than 500 volumes. Many of our public schools, however, possess libraries larger than these, but they are not enumerated in our lists. If they were, they would swell the number of American libraries far beyond that of any other country in the world.

In the aggregate number of volumes in the public libraries, Germany, France, Great Britain, and Russia, are before us. Were all the district school libraries and village collections in the United States included in the estimate, we should probably take the fourth rank.

In the average size of libraries containing over ten thousand volumes we are the *last of all.*

In the size of the largest library we also stand *last of all.*

In the number of volumes, compared with the population, we rank below all *but Russia and Spain.*

These results show that in public provisions for the general diffusion of knowledge by means of libraries, we stand in the very first rank among the nations; and when we consider the cheapness of our publications, and the vast number of them scattered over the land, with the extent of our periodical literature, we may justly and proudly challenge a comparison with any nation in the world for the means of general culture. This, certainly, is much for a country so new, whose chief energies have, as a matter of necessity, been directed to the felling of forests, the clearing of lands, and the support of physical life. It shows, as well remarked by a foreign writer, "that the men who, with steady and vigorous hand, have known how to rule themselves, and be completely free, have well discerned the foundations upon which alone the weal of a free State can safely repose."

But this deduction, so full of encouragement, so fraught with matter for gratulation and pride, must be followed by others of a different character.

The statistics given indicate, that while no country in the world has done so much for *diffusing* knowledge, none has done so little towards furnishing the means which public libraries can supply for its *increase.* It was doubtless the first duty of the infant republic to provide that all should know something, that the mass of the people should be elevated and enlightened. It has now become her duty to see to it, that no bounds are placed to the culture that each may obtain if he chooses. Now, in the hour of her strength, she ought to provide for her citizens the means of as high culture, of as profound research, of as noble advances in science, literature, and art, as are enjoyed by the citizens of any other nation in the world. She should take care that while the poor man's son may obtain that elementary education which will enable him to perform the duties of a good and intelligent citizen, he be not, by his poverty, debarred from the higher walks of science and literature; that there be no monopoly of learning by the rich—by those who are able to study at the institutions of Europe, or to surround themselves by the books which they need at home. Our condition in these respects has been deeply lamented by our scholars.

At various times strong efforts have been made for its improvement. At length the munificent bequest of a foreigner, placed at the disposal of Congress, furnished the means of meeting this, among other demands of science and letters. In the act of Congress establishing the Smithsonian Institution, and in the acts of the Board of Regents for the organization of the same, a large public library forms a prominent feature.

It has been supposed by some, not acquainted with researches requiring many books, that very large libraries are superfluous. They calculate, perhaps, how many books a man can read in a long life, and ask what can be the use of more. Nay, even many men fond of reading feel like an English writer of some note, who describes his pain as amounting to "midsummer madness" when he entered a large library and reflected how small a number of all the books it contained he could read through.

"In my youthful days," says De Quincey, "I never entered a great library, say of 100,000 volumes, but my predominant feeling was one of pain and disturbance of mind, not much unlike that which drew tears from Xerxes, on reviewing his immense army, and reflecting that in 100 years no one soul would remain alive. To me, with respect to the books, the same effect would be brought about by my death. Here, said I, are 100,000 books, the worst of them capable of giving me some pleasure and instruction, and before I can have had time to extract the honey from one-twentieth of this hive, in all likelihood I shall be summoned away."

"Now I have been told by an eminent English author, that with respect to one single work, viz: the History of Thuanus, a calculation has been made by a Portuguese monk, which showed that barely to read over the works, and allowing no time for reflection, would require three years labor at the rate of, I think, three hours a day. Further, I had myself ascertained that to read a duodecimo volume in prose of four hundred pages, all skipping being barred, and the rapid reading which belongs to the vulgar interest of a novel, was a very sufficient work for one day. Consequently 365 per annum, that is with a very small allowance for the claims of life on one's own account and on that of one's friends, one thousand for every triennium, that is ten thousand in thirty years, will be as much as a man who lives for that only can hope to accomplish. From the age of twenty to eighty, the utmost he could hope to travel through would be twenty thousand volumes, a number not, perhaps, above five per cent. of what the mere current literature of Europe would accumulate in that period of years."

Now, supposing for a moment that there were no other use to be made of books but the reading of them through at so many pages the hour, one would think it might have occured to this writer that there are among the frequenters of a large library a great variety of men, with a wide diversity of interests, tastes and pursuits; that though each might not be able to read through more than two thousand books—one-tenth part of the supposed number—still fifty men, whose reading was in diffierent directions, might call for a hundred thousand.

But apart from this consideration, and above it, is another of far more importance to the scholar. It is that this view of the use to be made of a large collection of books is founded upon an utter misapprehension of the relation of books and libraries to learning.

There are three uses to be made of books by those who understand their value.

The first is for *reading*. This, paradoxical as the assertion may sound, is the least important of their uses. By reading I mean cursory perusal, such as the writer above quoted describes. Reading as a pastime—reading for the acquiring of general information—reading as a means of refining and cultivating the tastes—is, indeed, indispensable to every well educated man. And the means of such reading in this country are largely supplied by our circulating libraries, athenæums, book auctions, and cheap publications. But the scholar has need of books for other and higher purposes.

A second important use of books is for *study*. By study, I mean that vigorous mental application, which is necessary in order to fully comprehend, weigh, analyse, and appropriate the thoughts, facts, and arguments of an author. It is study which disciplines the mind; which trains the intellect for the rapid accumulation and appropriate use of knowledge. It is study which gives education, which developes the faculties. But it is evident that for study one needs even fewer books, if they be rightly chosen, than for reading.

The third use to be made of books is for *reference*.

Every man has occasion to refer to a dictionary or an encyclopædia. Yet who ever undertakes to read one through? Every one accustomed to composition sometimes has occasion to trace the history and meaning of a word. "There are cases," says Coleridge, "in which more knowledge of more value may be conveyed by the history of a word than by the history of a campaign." But to learn the history or usage of a single word we may be compelled to look into five, twenty, or fifty dictionaries in different languages.

Now the use of books by scholars is in general analogous to the use of a dictionary by any intelligent man. There are some sciences which seem to require less the aid of libraries than others. It may even be true that some important discoveries have been the result of mere accident. But such is not the general rule. The progress of science is not fortuitous. Nature does not often disclose her treasures upon a blundering invitation. She must be diligently sought. He who would make valuable discoveries, must, as a general thing, prepare himself by a thorough acquaintance with the present condition and tendencies of the science which he cultivates.

He must do more, much more. "Of every branch of the two great subdivisions of human learning," (viz: science and literature,) says an able writer, "its history is a constituent part, absolutely necessary to all who would be competent to form just opinions on its present state." He must know the past in order to appreciate the present, and in order to help shape the future. He must not only be able to place himself on the line of demarcation between the unknown and the known, but if he would penetrate the darkness of the former, he must have gained his direction by a careful tracing out of the analogies of the latter. Consequently he must give himself to long-continued, patient, laborious study of the history of science.

Moreover, it is not only necessary to study that science which one wishes to enlarge by his discoveries: he must be familiar with the subjects which are allied to it. But where can we find the limits of any science? All knowledge is bound together by an indissoluble, though sometimes an invisible bond. He who is versed in but one department of science, and is entirely ignorant of others, cannot be said to be thoroughly acquainted with any. In the words of the writer already quoted, "If books

could be arranged in order of relevancy, with respect say to natural science, from the one which is most essential to it down to the one which is least essential to it, there would be no perceptible break anywhere, no point at which natural knowledge ends and other knowledge begins." What, then, must he who would devote himself to the enlargement of one department of knowledge, wait ere he commences till he has mastered all? By no means, such is not the inference. The legitimate conclusion from the argument is, that no thorough student in any one department of knowledge can safely say that he may not need 10,000, or even 50,000, books, and many of them of a character at first sight most remote from his path, not, indeed, for the purpose of reading or of studying them, but in order to settle, by momentary references, questions which may arise, the settling of which may be of the greatest importance to his progress.

If this be true with respect to those sciences where there is the least apparent want of books, much more is it so of those whose deductions are drawn from researches among the records of the past. The demands of the statesman, the jurist, the political economist, the historian, cannot be met without furnishing the materials for the widest investigation, nor always, indeed, those of the novelist or the poet. I have sometimes heard it said that the knowledge of the middle ages to be gained from one of the novels of Sir Walter Scott is far more valuable than that to be acquired from the perusal of a library of dusty tomes. But who that has ever lived was a more constant delver amidst the dusty lore of the past, in old libraries, among worm-eaten books, than the illustrious author of these volumes. He could not otherwise have produced them. Without the large libraries we could not have had the enchanting romance.

If it be asked, whether the libraries which we already possess are not sufficient to meet this demand, we reply, in the first place, that the large libraries of Europe, containing from 200,000 to 800,000 volumes, some of them selected with great care, have not been found large enough to meet the wants of her scholars, and we may not allow that our countrymen are less fond of learning, less thorough and profound in their investigations, when they have the means of pursuing them, than their transatlantic brethren.

It may, however, justly be supposed that the number of volumes is a very inadequate criterion of the value of a library; that a judicious selection may do much to compensate for numerical inferiority, and, consequently, that our libraries, although smaller, may be more useful to learning than the larger collections of Europe. This may be sufficiently answered by applying another and the most satisfactory method of testing the real value of our libraries; which is to take some works of acknowledged learning and importance, and inquire what books were necessary for their composition, and how many of them our public libraries can furnish? This process, it will be seen, is a tedious one. I have, however, pursued it in reference to a considerable number of books on a variety of subjects. Some of the results thus obtained may be stated in a few words, and they are fair specimens of all the others.

In Mr. Wheaton's History of International Law—a production which reflects great credit upon American talent and scholarship, and which procured for its lamented author the honor of election to the French Institute—139 works are referred to in the notes. A much larger number were, of course, consulted, many of which are mentioned in the body of the work. Thirty-nine among the most important and expensive of those

which are formally cited, are not to be found in the largest law libraries in the United States. More than one-half of the remainder are common books, to be found in any well selected general library of 5,000 volumes. This work was written in Europe. It could not have been written in this country from the materials contained in our public libraries.

If we take a book of a different kind, demanding for its composition a thorough knowledge of the history of one of the physical sciences, and, consequently, requiring the assistance of authorities less accessible and of less general importance, the result will be all the more striking.

In the first volume of Hoefer's History of Chemistry, 251 works are referred to. Of these, about fifty are common books, to be found in almost any library of 5,000 volumes. Of the remaining 191, I cannot find 75 in all our public libraries.

The plan of our Institution contemplates the publication of a series of reports on the condition and progress of various branches of knowledge, prepared by *collaborators* who are to be furnished with all the journals, domestic and foreign, necessary to aid them in their labors. Such reports, if properly prepared, will be very useful. We need merely refer, for illustration, to those published by the Swedish Academy. But the preparation of them will require the purchase of a great number of books which are not at present to be found in our public libraries. This will be made manifest by a few facts. Of 38 publications, mostly periodical, referred to in a late report of Berzelius on the progress of chemistry, I can find but 13 in our public libraries.

Mr. J. R. Bartlett informs me that of 204 works which he refers to in his report on the progress of ethnology, 129 are not to be found in the public libraries of New York, nor in any others probably in the United States. The cost of the books which, in order to prepare his work, he had to procure at his own expense, was $1,000. And yet this report is only a pamphlet of 151 pages.

From these facts it is manifest that there is no exaggeration in the language of one of the members of our Board of Regents, from South Carolina, who, in a report to the Senate in 1836, stated that "our whole body of literature, if collected in one place, would not afford the means of investigating one point of science or literature through all, or even a considerable portion of what has been written on it." Here, he adds, "where the foundations of government repose on the aggregate intelligence of the citizens, the assistance afforded by public institutions to the exertions of intellect is but one-tenth of that within the reach of the mind of civilized Europe."

The complaints of our scholars testify to our deficiency. Their wants have weighed heavily upon them. They have repressed genius. They may have condemned to oblivion names that would have rivalled the brightest in the history of science and letters. I might mention, it is true, Americans who have ranked among the most learned of the world. But they, like others less renowned, have had sorrowful experience of the deficiency of which we complain. They, however, in most instances, have, from their own private wealth, supplied the defects of public provisions. Had they been poor they would not generally have been the authors they were. They could not have had access to the necessary books, had they not possessed the wealth for buying them, or for crossing the Atlantic to consult them where they were already

accumulated. The pages of our literary journals, the eloquent speeches elicited in Congress by the bills to establish the Smithsonian Institution, and the united voices of the friends of good letters throughout the land bear sad and unvarying testimony to our deficiencies.

Now, to supply these wants, or, in other words, to place American students on a footing with those of the most favored country of Europe, is the design of the Smithsonian Library.

We have, as yet, been able to make no purchases, except of those books which were of immediate and indispensable importance to the officers of the Institution, including the Building Committee. It is profoundly to be regretted that we were not in a position to avail ourselves of the extraordinary opportunities for the purchase of books which have been offered in Europe during the last eight months. In May or June last, or even later, in September and October, more valuable books could have been purchased, it is said, for five thousand dollars than at ordinary times for fifty thousand. I felt it my duty to lay before the committee, last summer, the facts which I had collected on this subject, and to express the earnest hope that we might be able to profit by the juncture; but the financial arrangements of the Board entered into for the purpose of completing the building prevented any immediate appropriation for this purpose. It is gratifying to know, that although this profiting must be lost to us in particular, our country will share in it, through the exertions of the gentleman to whom—most fortunately for American scholarship—has been entrusted the task of selecting and purchasing a large library for our chief city.

I should deem it hardly necessary at this time to allude to an idle story which was circulated about a year ago, to the purport that the Institution had expended $2,500 for the purchase of an old Bible, valuable principally as a typographical curiosity, were it not that many of our citizens are not to this day disabused respecting it, and really suppose that we committed the folly thus imputed to us. No such purchase has been made or contemplated. On the contrary, I believe that all the officers of the Institution are decidedly opposed to any such expenditure of the fund. We wish books for use and not for the gratification of mere curiosity.

By a decision of the Regents, the income of the institution, which, after the completion of the building, will amount, it is hoped, to nearly $40,000 per annum, will be permanently divided between two great methods of increasing and diffusing knowledge which had been proposed and discussed; the one by publications and original research, the other by collections in literature, science, and art. The share of money which, in accordance with this arrangement, will fall to the library, will not be sufficient to enable it to meet at once the demands of our expectant scholars. It will be many years before their wishes can be fully gratified; but in the meantime, by a wise expenditure of the funds, and by other assistance which our arrangements provide for, it is hoped that the library will be such as to afford great aid to learning.

The plan of collecting the library is as follows:

1. To purchase such books as may be needed by the various officers of the institution, and by persons preparing memoirs and reports for our publications, or engaged in researches under the direction of the Secretary.

2. To procure such works as may be required to render the institution a centre of bibliographical reference.

3. To procure a complete collection of the memoirs and transactions of learned societies throughout the world, and an entire series of the most

important, scientific, and literary periodicals. The continuation of these may be obtained in exchange for our own publications.

4. The remaining funds of this department will be devoted to the purchase of books of general importance; at first, most especially those which are not to be found in other libraries of the country.

In pursuance of this plan, I have been occupied in making lists of books to be purchased.

With reference to the first class of books, namely: those needed by the authors and collaborators, it is, of course, impossible to do any thing more than to meet wants as they arise.

Of the second class of books, viz : those necessary to make the institution a centre of bibliographical knowledge, I have the honor herewith to present a list selected with great care and the best counsel which I could command. This list contains about 3,000 volumes. The work of Namur, published in 1837, purporting to be a complete catalogue of bibliographical works, contains 10,236 titles. A complete bibliographical library would contain nearly 20,000 volumes. The 3,000 volumes of the list, now presented, are not therefore to be considered as constituting a complete catalogue of books in this department, but merely as a selection of those most immediately important.

Every list of this kind should include not only works professedly bibliographical, but also histories of literature, of science, and of art, as well as many biographical and critical works.

It is impossible to estimate too highly the value of such a collection. In a large library these works are the guides to research, showing what to read, study, or consult. In the absence of such a library, they supply to some extent the deficiency by describing books in such a way as oftentimes to enable us to dispense with the books themselves.*

And yet the importance of bibliographical studies is in this country but

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* "In literature and science books are the tools, and it is impossible to under-estimate the use of a critical acquaintance with them except to those who underrate knowledge itself. Of every branch of the two great subdivisions of human learning, (viz: literature and science,) its history is a constituent part, absolutely necessary to all who would be competent to form just opinions on its present state.

"The scientific societies are not very anxious to have in their libraries the rare books belonging to their several departments. For this, one reason is want of funds; but this might be overcome if it were not for another, namely, a general indifference among the members to exact and minute knowledge of the history of science. The *peu nous importe au reste* with which Delambre often dismisses a secondary point, of which a satisfactory settlement does not come readily to hand, had been readily agreed to by his critics and his readers. The consequence is, that any one who proceeds to examine closely the actual records of the progress of science, finds confusion upon confusion and mistake upon mistake in all matters which are not of general interest.

"It is worthy of note how completely several of the best histories of branches of science are on a bibliographical basis, proceeding rather from book to book than from man to man. Such are those of Weidler, Delambre, and Kästner, for though the nominal arrangement of the first is by men in order of time, yet the men are only constituent parts of their own title pages.

"In literary history books are the main facts, and none but those who have tried it can tell how many difficulties are thrown in the way of an investigator who has truth for his object and permanent rules of evidence for his guide, by the misstatements which exist upon works which, however necessary it may be to know them, it may hardly be worth while to name. The date, the author's christian name, the very size of a book may be the turning points of the proof of a fact. The inquirer cannot have all the books before him, of many he wants only the proper description, and being certain of this, he could almost dispense with any knowledge of the contents.

"But let the reader *think* what he pleases, the historian of science *knows* that he cannot do well without complete and correct bibliography."—*Dublin Review, September*, 1846, *Art.* 1, *on Mathematical Bibliography.*

too little appreciated. In truth, the neglect of them is the most fruitful source of superficial, conceited, and rash authorship. On the continent of Europe, however, they are held in the highest esteem. This is doubtless one principal cause of the acknowledged superiority of the Germans in all matters requiring wide research.

Every student worthy of the name, when about to investigate a subject, wishes to know first what has been done by others in the same field.

Now, on almost every important branch of learning some diligent scholar has collected from the whole domain of literature the books pertaining thereto, arranged them for convenience of reference, analyzed their contents, and described their absolute and relative merit, with their external peculiarities and history. He has thus given a *bibliography* of that branch of knowledge. Such a work should manifestly be the first to be taken up, and among the last to be laid down by any one who would intelligently study that subject. A collection of such works, pertaining to all departments of knowledge, ought to be the first purchase for every general library.

Yet there is no respectable collection of them in any of our public libraries. The best is, I believe, that of Brown University, which contains but a few hundred volumes. Without question, therefore, by procuring the books necessary for carrying out the plan of making the library a centre of bibliographical reference, we shall furnish one class of books most immediately important to American scholars, as well as one most needed in making judicious selections for the future, and in aiding other libraries in the country in their choice of books.

The selection here offered is intended to cover nearly the whole ground of bibliography, and is arranged under the following divisions:

1. BIBLIOTHECAE BIBLIOGRAPHICAE, or catalogues of bibliographical works.

2. ELEMENTARY BIBLIOGRAPHY, including treatises of the origin and progress of writing; of ancient manuscripts, their materials, form, ornaments, preservation, and the method of deciphering them; of printing, its history, and practice; of the arts of engraving, binding, paper-making, &c.; of the forms of books; of the rights of authors, publishers, and readers; of the book trade; of the use and abuse of books; of libraries, their history, statistics, selection, arrangement, preservation and use.

3. PRACTICAL BIBLIOGRAPHY. Works designed to be used in the selection and purchase of books. These may be—

(1.) *Universal*, comprising books in all languages, on all subjects, and of all periods.

(2.) *Limited*—

a To particular countries or languages.

b To particular periods of time.

c To particular branches of knowledge.

d To works classed according to some accidental peculiarity, as rare, anonymous, pseudonymous, polyonomous works, books privately printed, books prohibited, books condemned to be burned, &c.

e To particular kinds of composition, as poetry, proverbs, &c.

Under most of these heads are comprised works of several kinds, viz: 1. The history of the subject; 2. The bibliography, properly so called, i. e. the *catalogue raisonné* of all books relating to it; 3. The biography of its

cultivators; 4. The journals which contain the record of its progress. Thus, in the department of natural history, would be included Cuvier's History of the Natural Sciences, Engelmann's Bibliography of Natural History, Callisen's Biographical Dictionary of Naturalists, and the Annals of the Natural Sciences; and inasmuch as neither of these is perfect of its kind, there must be many others of each description.

With regard to the third class of books, viz: the memoirs and transactions of learned societies, I have made, and herewith present a list which I believe to be nearly complete, of all the publications of learned societies in actual operation throughout the world. Doubtless these publications possess various grades of merit. But it is difficult, and I think undesirable, to reject any of them. Papers of the greatest importance are sometimes published in the transactions of the most obscure provincial academies.

The Department of Public Instruction of the French government published in the year 1847 the first volume of a work intended to be continued annually, entitled "Annuaire des Sociétés Savantes de la France et de l'Etranger." The volume for the first year, an octavo of more than 1,000 pages, contains historical sketches of all the learned societies in France, the regulations of the institutions, an account of their various publications, and other works, and the names of their members. A similar account of the academies of other countries was promised for the second year, but I cannot learn that it has yet appeared. The labor upon it was probably interrupted by the revolution of February, and has not yet been resumed.

The lists which I now present are made from the Rev. Dr. Hume's "Learned Societies and Printing Clubs of the United Kingdom" for Great Britain, the "Annuaire" for France, and from various other sources, principally from the first volume of the catalogue of the printed books in the British Museum for other countries.

The remaining duty assigned me was the systematic arrangement for purposes of comparison of the printed catalogues of the principal libraries in the United States. This, also, is a part of the plan for rendering the Institution a centre of bibliographical knowledge.

I have commenced the work in the following manner: Taking the printed catalogue of the library of Harvard University, I separate the titles and paste each one upon a card about six inches long by four wide. This size of card was selected in order to allow room for long titles with the annotations which may be necessary. The letters "H. U." are to be stamped upon the card to denote that the book belongs to Harvard University. When the titles of the Harvard catalogue are finished it is proposed to begin upon the catalogue of the Philadelphia Library. Whenever the titles are the same it will be sufficient to stamp upon the card in addition to the letters "H. U." the letters "P. L. C.," thus denoting that the book belongs also to the Philadelphia Library Company. When new titles are found, they should be placed upon cards like the others. The catalogues of all the other libraries are to be treated in like manner. When the arrangement of the printed catalogues is completed, it will be necessary to obtain manuscript continuations. These must be copied on the same kind of cards. It will then be easy to arrange the titles in alphabetical or other order, and to preserve them in such order, however frequent and numerous the accessions which may be made.

It is hardly necessary to enlarge upon the great value of such a cata-

logue. From it we could readily ascertain what books there are in the various public libraries, and how well each department of learning is provided for. We should thus be enabled to fill up our own library with a more intelligent reference to the actual wants of the country.

Such a catalogue will also enable us to direct the student to the books which he may want, if they are to be found in any of our libraries.

There will be also an incidental advantage gained by it of great importance to the department of American history and bibliography. The institution proposes to publish among its "Contributions" a complete bibliography of the materials of American history prior to A. D. 1700. This will be one of the most valuable contributions ever offered to the facilities for studying the early history of our country. But it is only a commencement. The books relating to and printed in America after 1700 are vastly more numerous and certainly of great importance. They relate to the period of our early struggles, to the achievement of our independence, to the formation and consolidation of our government. No proper bibliographical survey of this wide field has ever yet been made. The books and pamphlets relating to it were published, the larger part, perhaps, in America, but many of them in Europe, and they are now scattered far and wide. Some very valuable collections have been made of them, the best of which is due to the diligence, learning, and devotion of a distinguished gentleman of this city.* No collection, however, that has yet been made can be considered complete. Still we may safely say that a large proportion of the books extant relating to this period are to be found among the libraries of the United States. One great difficulty heretofore encountered by our bibliographers has been to ascertain where they are preserved. Many libraries have no printed catalogues; of others the catalogues are far in arrears. From our proposed general catalogue it will be easy to find every book of this description which is preserved in any of our collections, and to ascertain at a glance the place of its deposite.

I have made, of course, but a commencement on this work. To bring it to completion will be the labor of more than another year.

In conclusion, I may add that the plans in operation for the library will, it is hoped, soon render it a valuable aid to American scholarship. Its sphere is quiet and unobtrusive, but none the less useful. Ere long it is destined, we hope, to rank among the largest, the best selected, and the most available literary treasure-houses of the world. Wherever such a collection is formed, be it in a large metropolis or a provincial town, thither students will resort. They will soon give tone and character to society around. Even in the great emporium of commerce, under the overshadowing power of trade, its influence would soon be recognized. Here, at the political centre of the nation, where assemble her statesmen and her orators, under a benignant sky, amid scenes consecrated in her history, a spot as accessible as any other from all parts of the country, is the most favorable location for a great library. Such a library will attract hither our scholars, now pursuing their investigations in Europe, or mourning at home over noble projects abandoned before the necessity of so long and

*I allude to the library of Colonel Peter Force. It contains more than 20,000 books, with large numbers of manuscripts, pamphlets, handbills, maps, &c., mostly relating to American history—an invaluable collection, one of the chief ornaments of our city, where we trust it will ever remain.

expensive a pilgrimage. It will render Washington the centre of American learning. Its influences will descend noiselessly upon the community around, and spread in ever-widening circles over the land, softening the asperities of party contentions, calming the strifes of self interest, elevating the intellect above the passions and the senses, cherishing all the higher and nobler principles of our being, and thus contributing more than fleets and armies to true national dignity.

Respectfully submitted.

C. C. JEWETT.

No. 2.

The Executive Committee submit to the Board of Regents the following report of the expenditures, state of the finances and condition of the Smithsonian Institution.

The whole amount of Smithson's property received into the treasury of the United States on the 1st September, 1838, was $515,169. The interest which had accrued on the same up to 1st July, 1846, when, by the act of Congress, the funds were placed under the direction of the Board of Regents, was $242,129. This sum, together with the accruing interest, the Board of Regents were authorized to expend in the erection of a building and in defraying the current expenses of the institution.

During the last two years and four months, in which the institution has been under the charge of the Regents, there has been expended towards attendance of the Regents, and incidental and miscellaneous expenses, the erection of the building, improvement of grounds, salaries of officers, the sum of $106,520 19, as will be seen in the following exhibits, viz:

Construction of buildings, including superintendence		$51,678 48
Expenses of architect's office, traveling expenses, stationery, draughtsman, &c.		1,213 00
Laying corner stone		21 00
Examination of quarries and specimen walls		74 00
Improvement of grounds		1,290 88
Publication of "Hints on Public Architecture"		1,147 25
Occultations and researches		525 00
Philosophical and chemical apparatus		332 70
Public lectures		80 00
Publication of Contributions to Knowledge		3,709 34
Library, and salary of librarian		1,741 38
Pay of messenger		388 13
Recording and copying for Board of Regents, Executive Committee, &c.	$116 54	
Do for Secretary	232 00	
		348 54
Incidental expenses	533 10	
Do for Secretary, including office rent	177 65	
		710 75
Expenses of Board of Regents and Committees		966 90
Expenses of Secretary consequent upon the delivery of lectures at Princeton, and expenses to New York and Philadelphia on business of the Board		280,50

[N. B. The proceeds of the lectures at Princeton, $1,000, have been paid by the Secretary.]		
House rent of Secretary for two years - -		$550 00
Payments to Secretary on account of salary - -		3,824 31
		68,880 17
Disbursements as exhibited by previous reports -		37,670 02
		106,550 19
During the same time, there has been received from interest and the sale of treasury notes, the sum of -		$115,964 60
From the Secretary's lectures at Princeton - -		1,000 00
		116,964 60
Leaving a balance on hand of - - -		10,444 41

Funds of the Institution.

Amount of Smithson's bequest - -	$515,169 00	
Interest due thereon to 1st July, 1846 -	242,129 00	
		$757,298 00
Balance on hand 1st January, 1849 -	10,444 21	
Treasury notes on hand - -	226,000 00	
Permanent fund - - - -	515,169 00	
		751,613 41
If to this we add the premium of 8 per cent., which treasury notes now bear, say - - -		18,000 00
The funds of the Institution will be - - -		773,613 21

Thus showing, that after an expenditure of $106,550 19, the cash on hand and the value of the cash investments, exceed the amount on hand, on the organization of the Institution, in September, 1846, by nearly $16,000, subject, however, to a few outstanding accounts not yet presented, estimated at $7,500.

The committee are confident that by continuing the system of finance recommended by the committee and adopted by the Board of Regents at their last annual session, the building can be completed and the institution be put into full operation at the end of three years from March next, without withdrawing more than $100,000 from the fund of $242,169 set apart by Congress for buildings, &c., leaving the residue, $142,000, to be added to the amount of the original bequest of Smithson, and making the permanent fund of the Institution $657,000, yielding an annual income of $39,420, (which may thereafter be readily increased to $40,000 per annum,) for the increase and diffusion of knowledge.

During the past year the committee has held frequent meetings at the call of the Secretary, for consultation with that officer on the affairs of the Institution. The several operations mentioned in the Secretary's report

were discussed at these meetings, and several small appropriations were authorized, which arose from contingencies unforeseen by the Board, and which were duly charged and exhibited in the accounts of the committee. The Board of Regents having authorized the Executive Committee to make compensation to the Assistant Secretary, acting as librarian, for his services to the Building Committee, and relative to the library, have granted him the sum of $250.

An extra edition of the Secretary's report for the year 1847 was ordered to be printed for the use of the Board of Regents from the forms used by the printer for Congress.

Mr. Bache and the Secretary were appointed a committee to confer with Dr. Hare relative to the presentation of his extensive and valuable chemical apparatus to the Institution; which committee afterwards reported that Dr. Hare had unconditionally presented his apparatus to the Institution, and that workmen had been employed to clean and pack the same for removal to Washington. A complete set of the "Annales de Chimie" was authorized to be purchased of Dr. Hare, to accompany his apparatus.

The Secretary was authorized to order, conditionally, the instruments necessary to complete the outfits of Lieutenant Gillis of the navy, on his scientific expedition to Chile.

A number of propositions relative to publications, researches, &c., have been submitted to the Executive Committee, and have been referred to the Secretary and Dr. Bache.

On consultation with the Secretary and Librarian, the committee recommends the following appropriations for the operations of the Institution during the year commencing on the 19th March next, viz:

For publication of Contributions to Knowledge - -	$3,000 00
Scientific researches and computations - - -	700 00
Meteorological instruments and researches - -	1,000 00
Expenses of public lectures, including lights - -	500 00
Publication of scientific reports - - - -	500 00
General catalogue of American libraries - - -	1,000 00
Purchase of bibliographical works and books of general reference - - - - - -	2,000 00
Binding of books, blank books, stamps, certificates, &c.	250 00
Purchase of books needed by authors of memoirs, reports, &c. - - - - - -	400 00
General expenses, including salaries of officers, expenses of Board and committees, clerk hire, postage, &c. -	8,000 00
	17,350 00

The aggregate of the above estimates exceeds, by the sum of $2,350, the amount limited by the finance resolutions of the Board of Regents, December 1, 1847, as applicable each year for the operation of the Institution, exclusive of the building fund, until the year 1852, when the building is to be completed and the entire income of the Institution left free for the prosecution of the objects contemplated by the acts establishing the Institution; but as the present available funds exceed the amount anticipated when these resolutions were adopted, it is believed that the

additional $2,350 may be spared in the ensuing year for the objects specified, without trenching on the annual building fund, or endangering the accomplishment of the end had in view by the Board of Regents in adopting the finance resolutions of December 1, 1847, namely, the saving of a certain sum to be added to the permanent fund. In conclusion, the committee would beg leave to submit to the Board that the amount and variety of disbursements which the Executive Committee have to make, and the proper keeping and recording the accounts and appropriations of the Institution, require the services of a skillful accountant and book-keeper for the performance of this duty, as well as the examination of accounts for payment, the preparation of estimates on which to base requisitions, the preparation of statements of expenditures for the examination and approval of the proper officers, as required by law, preliminary to their presentation to the Treasury Department for settlement, and such other duties of accountant, book-keeper, and clerk, as the Board of Regents, the Executive, and Building Committees, and the Secretary may have occasion to require of him.

The committee therefore recommend the appointment of such an officer, at an annual salary not exceeding four hundred dollars.

All of which is respectfully submitted,

W. W. SEATON,
J. A. PEARCE,
A. D. BACHE.

WASHINGTON, *January* 1 1849.

No. 4.

During the past year the Smithsonian building has been advanced in a manner satisfactory to the committee.

An inexhaustible supply of freestone of excellent color and quality is afforded by the quarries; and the deliveries have met with no such interruptions from failures in the canal as were experienced last year, to the great delay of work upon the building.

The east wing of the building, and the adjacent connecting range, are so far completed that the architect promises a state of readiness for occupation early in January. He reports the whole interior of this part to be finished, with the exception of the shelving of the cases—purposely delayed to enable the Secretary of the Institution to adjust it to the apparatus which it is to receive. He reports, also, that the furnaces for supplying warm air to these rooms, and also the ventilating apparatus, will be completed at the same time.

The west wing and its connecting range are completed externally, and the interior of the hall of the gallery of art—intended to be used temporarily as a library—is well advanced. A portion of the book-cases are in progress, and will be placed in this apartment until the library-room proper, in the centre building, shall be ready for their reception.

The foundations of the whole of the main building, including the towers, are laid, and the superstructure carried about five feet high. The campanile and octagonal towers, and two smaller corner towers of the centre, are 30 feet above their foundations.

The architect also represents that the contractor, Mr. Cameron, has cut

all the stone for the first story of the main building, and designs, if possible, to have the whole of this part of the structure under roof before the winter of 1849-'50, in order the better to protect the walls.

The committee see no reason to doubt that the whole structure will be completed within the time specified in the contract, namely, by the 19th day of March, 1852.

The total amount expended on the building and on the fencing of the lot, including superintendence, and all incidental expenses connected therewith, up to the 1st of December, 1847, was, as stated at that time - -	$25,002 67

The amount expended on the building and its appurtenances from the 1st of December, 1847, to the 31st December, 1848, is as follows:

Paid Mr. Cameron, contractor - - - -	$50,860 00
Paid Mr. Renwick, architect's salary - - -	1,800 00
Paid Mr. Renwick for travelling expenses - - -	330 94
The expenses of architect's office, including furniture for and incidental expenses of the same, drawing instruments, stationery, and pay of draughtsman - - -	253 69
Paid Mr. Robert Mills, assistant architect and superintendent, for part of the year - - - - -	392 73
Paid Mr. Brown, superintendent, for three months -	187 50
Paid for improvement of grounds - - - -	109 88
Total - - - -	$53,934 74

The total expenditure on the Smithsonian building from the beginning up to the 31st of December, 1848, may be thus stated:

Paid Mr. Cameron, contractor for the building - -	$71,700 00
Paid Mr. Renwick, architect, as salary - - -	3,475 48
Paid Mr. Renwick for travelling expenses - - -	629 78
The expenses of architect's office, including furniture for and incidental expenses of the same, stationery, drawing instruments, and pay of draughtsman - - -	583 23
Paid Mr. Mills, as assistant architect and superintendent -	1,247 84
Paid Mr. Brown, as superintendent, for three months -	187 50
For improvement of grounds - - - -	743 38
For water-pipes and laying the same - - -	660 00
Making a total to the end of the year 1848, of - -	79,227 21

At the last annual meeting (December, 1847,) it was resolved that there should be considered applicable to the building, (including preceding expenditures,) up to the 19th day of March, 1848, the sum of - - - - -	$42,000 00
And for the year ending March 19, 1849, the further sum of	52,000 00
Total - - -	94,000 00
But, as shown above, the expenditures to the end of the year 1848, have been - - - - -	79,227 21
Leaving a balance applicable, of the building fund, between 1st January and 19th March, 1849, of - -	14,772 79

Judging from the progress already made, the committee are of opinion that the contractor will be able to finish the building, and all other matters comprised in his contract, for the stipulated amount; and that all expenditures connected with the building, including the laying out of the grounds, planting, sodding, fencing, road-making, heating, ventilating, &c., may be comprised within the limit of $250,000, set by resolution of the board at the last meeting.

During the past year the committee have entered into contract, amounting to $1,050, with Mr. John Douglass, of Washington, for enclosing the grounds of the Institution with a hedge, and for planting trees and shrubbery. The architect having marked out the paths and roads, and indicated the positions of the trees and shrubs, these, comprising about 160 species, principally American, have already, for the greater part, been planted, as well as the surrounding hedges, which are to consist of pyrocanthus, Osage orange, Cherokee rose, and hawthorn, respectively, on the four sides of the lot. Investigations and inquiries that have been made on this subject, satisfy the committee that this climate is favorable to the growth and maintenance of hedges, and that for a moderate expense a permanent and beautiful enclosure will be secured. The architect has been requested to prepare drawings and estimates of the gateways necessary to connect the building with the adjacent streets.

Proposals have been obtained for putting up furnaces in the east wing; also, for sodding a portion of the ground immediately around the building, and for making permanent roads and paths from the streets to the building and through the grounds; but it is not contemplated to engage in these last-mentioned works at present.

In relation to the work entitled "Hints on Public Architecture," prepared by the late Chairman of the Building Committee, for publication by that committee under resolution of the Board, it is to be stated that the manuscript has been submitted, under vote of the committee, to the inspection of Judge J. K. Kane, of Philadelphia, Governeur Kemble, esq., of New York, and President Everett, of Cambridge University. From all of whom letters communicating their opinions of the work have been received, and are submitted with this report.

Mr. Owen, in a late letter to one of the committee, states his intention to be in New York by the 20th December, to superintend the printing; the printer refusing without his supervision and arrangement of the illustrations, &c., to put it to press, and expresses his confident belief that it will issue by the 10th of February—certainly, before the adjournment of Congress.

The architect of the Institution, who has drawn many of the illustrations, and superintends the engraving gratuitously, states that all the engravings are ready, or nearly so, and that the illustrations will amount to upwards of 100, of which six will be lithographs and the remainder wood-cuts by the best engravers in the country.

The wood-cuts generally do great credit to the engravers; a few of the principal ones have been brought on by the architect, and are herewith laid before the board.

The expense of the engravings contrated for will be $2,000, of which $ has been paid up to 1st December, 1848, the remainder being due the engravers.

The vestry of Grace Church, in the city of New York, have presented to the committee a lithograph of that building, which will cost the vestry

$100. The draughtsman, Mr. Wade, Messrs. Bobbett & Edmonds, engravers, and Mr. Putnam, the publisher, have presented a beautiful illustrated title page which was designed by the architect of the building.

As it may be satisfactory to the board to learn as much as can now be communicated in relation to such expenditures—not embraced in the contract with Mr. Cameron—as have been, or will be, necessary upon the building and grounds; and which must fall within the building fund of $250,000—the commitee proceed to add the following statement:

Amount of Mr. Cameron's contract - - -		$205,250
Remainder applicable to other objects connected with the building or grounds than those provided for in said contract - - - - - - -		44,750
		250,000
Amount applicable as above - - - -		44,750
Portions of the expenditures now referred to, are either fixed and definite in their nature, or have been already settled by resolution; they are as follows:		
Architect's salary for five years - - -	9,000	
Superintendent's salary for five years - -	5,000	
Incidental expenses allowed to architect - -	2,000	
Facing area wall with cut stone, extra work, allowed by resolution - - - - -	480	
Adding battlements to cloisters of east wing, extra work, allowed by resolution - -	200	
Additional cases for apparatus, ordered by Secretary -	200	
Contract for hedging, with Mr. Douglass - -	250	
Contract for planting trees and shrubs, with the same person - - - - - -	800	
Furnaces for warm air, registers, &c., already contracted for—say - - - - -	600	
		18,530
Which amount of $18,530, deducted from the above sum of $44,750, leaves applicable to other objects of the same nature, the sum of - - -		26,220
Two or three other small expenditures may be set down as admitting specific and close estimate, viz:		
Two chimneys to east wing, being extra work already done, and which, in the opinion of the architect, should be allowed - - - - -	400	
Sodding ground near building, estimated at - -	100	
Deducting this total, viz - -	–	500
There still remains the sum of - - -	–	25,720

Some of the matters to which attention is addressed as having claims upon this sum, are: the addition of other battlements to cloisters; of a clere

story to the museum; the substitution of flights of iron for wooden steps in the towers; other hot-air furnaces; registers for ventilation; gateways into the grounds; additional trees and shrubs; making roads and paths &c., &c., &c. These objects, some indispensable, others more or less urgent, all conducive to utility, permanence, beauty, or convenience, will be decided on by the committee under the authority with which they consider themselves intrusted, and as occasion shall arise, only after mature deliberation on careful estimates in detail, and in a spirit of strict economy. The committee, above all things, intend to keep an earnest regard upon the pecuniary limits set to their operations, and to allow no transgression thereof, either by actual expenditure, or by engagements, or pledges.

A few words remain to be added in explanation of the extra work and alterations of plan alluded to in the preceding statements: as to which it is due to the architect to premise that these have not been caused by any omissions in the specifications of the contract. One item is for *facing the areas with cut-stone*—the contract having provided a facing of good blue Potomac gneiss. The change was adopted because it was thought that a stone facing of the same material as the face of the superstructure would be more harmonious with, and conducive to, the general effect of the exterior of the structure.

2. *Battlements of cloisters.*—After the cloisters of the east wing were completed, it became evident to the architect that from the comparatively low situation of the building, the roofs were too conspicuous, and should be concealed by an appropriate battlement. He therefore advised, and the committee sanctioned, the expenditure of $200 for the battlements of the eastern cloister. The committee has yet to act upon a like suggestion as to the western range.

3. *Two extra chimnies in the east wing* were added by the building committee after the plans were made, but before the contracts were signed. Mr. Cameron states that he was not aware of this addition, as it was made after he had completed his estimate; and the architect is therefore of opinion that his claim of extra compensation is just and equitable.

JOS. G. TOTTEN,
W. W. SEATON,
HENRY W. HILLIARD.

WASHINGTON, *December* 31, 1848.

APPENDIX A.

PROSPECTUS.

BIBLIOGRAPHIA AMERICANA:

A Bibliographical Account of the Sources of Early American History; comprising a description of books relating to America, printed prior to the year 1700, *and of all books printed in America from* 1543 *to* 1700, *together with notices of many of the more important unpublished manuscripts.*

Prepared by Henry Stevens, and published under the direction of the Smithsonian Institution at Washington.

PLAN OF THE WORK.

1. It will contain a descriptive list of all books relating to America, and of all books printed in America, prior to the year 1700, which may be found in the principal public and private libraries of Europe and America, or which are described in other works; together with notices of many of the more important unpublished manuscripts.

2. The descriptions will be made, as far as possible, from an examination of the books themselves. If any be taken from other sources of information they will be distinguished by some peculiar mark.

4. The titles, including the imprint or colophon, will in all cases be given in full, word for word, and letter for letter.

4. The *collation* of each book will be given; that is, such a description as will indicate a perfect copy.

5. The market value of the books, with the prices at which they have been sold at public sales, will, whenever possible, be given.

6. Different editions and various translations of the principal works will be diligently compared with each other, and their variations and relative merits pointed out, especially of such works as the Collections of Voyages and Travels by De Bry, Hulsius, Ramusius, Hakluyt, Purchas, Thevenot, etc.; the corresponding parts of which will be compared, not only with each other, but with the editions of the works from which they were translated, abridged, or reprinted.

7. Bibliographical notes will be appended when deemed necessary, containing abstracts of the contents of the works when the titles fail to give a proper idea of them; anecdotes of authors, printers, engravers, etc.; important items of historical and geographical information; notices of peculiarities of copies, as large paper, vellum, concelled leaves, etc.; the number of copies printed; together with the comparative rarity and intrinsic value of the works.

8. The notes upon the books printed in America will comprise a full history of the origin and progress of printing in North and South America, from the year 1543 to 1700.

9. Under the title of every work will be designated one or more libraries in which it may be found.

10. The titles will be arranged alphabetically, under the names of the authors, or the leading word of the title.

11. The work will contain a full introductory memoir upon the materials of early American history, together with an account of the principal collections of them which have been made in Europe and America.

12. Three indexes to the contents of the work will be given, viz: 1. A chronological index, in which the titles will be arranged according to the years in which the works were printed; 2. An index of the subjects treated in the books; 3. An alphabetical index of the persons and subjects mentioned in the notes and introductory memoir.

PREPARATION OF THE WORK FOR THE PRESS.

1. The expense of preparing the work for the press will be defrayed by subscription.

2. It is estimated that the work will contain not less than five thousand titles, which are to be obtained from the public and private libraries of England, Ireland, Scotland, France, Germany, Denmark, Sweden, Holland, Belgium, Spain, Italy, America, etc. It is obvious that if any single individual possessed the requisite knowledge of languages and bibliography for this task, it would require of him several years of unremitting toil. In order, therefore, to accomplish the labor within a reasonable period, it will be necessary to employ upon it several persons. These should be learned and responsible men. Such men cannot be employed unless their services be well requited. Besides this, the whole work must be superintended and revised by Mr. Stevens himself; who, for this purpose, will be subjected to heavy travelling and other expenses. It is estimated that the necessary expenses attending the preparation of the work for the press, to say nothing of Mr. Stevens's own time and services, will amount to $5,000 (or £1,000.) The work will not, therefore, be commenced until this sum is subscribed.

3. Any public institution or any individual possessing books of this class may join in the subscription on the following conditions, viz:

(1.) That all the books of this class, belonging to each subscriber be submitted to the inspection of Mr. Stevens, and all reasonable facilities and assistance be afforded him in his work.

(2.) That the name of the subscriber be indicated under the title of every book which he contributes, so that when the work is completed, it will show not only the treasures, but also the deficiencies in this department of the library of each subscriber, and enable him by marginal marks against the titles of books which he may subsequently procure, to preserve a perpetual record of his collection and of its deficiencies.

(3.) That each subscriber be entitled to contribute not only the title of every book of this class which he may possess at the time of subscribing, but also of all other books of this class, which he may procure for his own library previously to January, 1850, or before the work shall go to the press.

(4.) That the sum subscribed by each be in proportion to the number of titles contributed, or be such as Mr. Stevens may accept.

(5.) That this sum be paid to Mr. Stevens on the acceptance of the manuscript for publication by the Smithsonian Institution.

(6.) That each subscriber be entitled to receive from the Smithsonian Institution ten copies of the work for every $500 (or £100) subscribed, and in the same proportion for a larger or smaller subscription.

4. Inasmuch as the library of the British Museum contains a larger number of this class of books than any other library in the world, and at the same time affords extraordinary facilities for bibliographical research, it is proposed to commence the work there. All the titles which this library can furnish will be written out upon cards, made for the purpose, measuring about eight inches by six. When these have been carefully revised and copied, they will, if it be desired, be sent in small parcels to each of the subscribers for their inspection and remarks. When the work is completed, so far as the library of the British Museum can furnish the materials, Mr. Stevens will himself visit each of the other libraries for which he shall have received subscriptions, comparing and revising the titles, and adding such other books as he may find, which had not been previously described.

5. It is hoped that sufficient force can be advantageously employed upon the work, to prepare it for the press in eighteen months.

Publication of the Work.

When the manuscript of the work shall have been completed, according to the plan detailed above, it is to be delivered to the Secretary of the Smithsonian Institution, at Washington, who will, in accordance with the rules of the institution as published in the *Programme of Organization*, of December 8, 1847, submit it to a commission of competent judges. If this commission report favorably as to the faithful execution of the work, it is to be published and distributed at the sole expense of the Smithsonian Institution, constituting one or more volumes of the quarto series of Smithsonian Contributions to Knowledge, similar in form and style of execution to the first volume, about to be published. It will be uniform with the quarto edition of the United States Exploring Expedition.

BOSTON, *July* 7, 1848.

GENTLEMEN: I beg leave to offer for your consideration the enclosed plan of a Bibliographia Americana, and to solicit for the enterprise the patronage and encouragement of the Smithsonian Institution.

I have the honor to be, gentlemen, your obedient and humble servant.

HENRY STEVENS.

Prof. JOSEPH HENRY,
Secretary of the Smithsonian Institution.

Prof. CHARLES C. JEWETT,
Librarian of the Smithsonian Institution.

SMITHSONIAN INSTITUTION,
Washington, July 17, 1848.

We highly approve of the foregoing plan of the Bibliographia Americana, submitted to us by Henry Stevens, esq., accompanying his note of July 7, 1848, and certify that the work will be accepted for publication in the Smithsonian Contributions to Knowledge, provided the execution is found satisfactory to a commission of competent judges, appointed by the Institution for its examination.

JOSEPH HENRY,
CHARLES C. JEWETT.

Letter addressed to several gentlemen.

SMITHSONIAN INSTITUTION, *July* 14, 1848.

MY DEAR SIR: Mr. Henry Stevens has submitted to me, as Secretary of the Smithsonian Institution, his proposition to prepare a bibliographical account of books relating to or printed in America prior to 1750, the details of which he informs me have been submitted to you. I beg leave to request an expression of your opinion as to the importance of such a work, and whether it would be of sufficient interest to the student of American history to warrant its publication in the series of volumes forming the Smithsonian Contributions to Knowledge.

My object in making this request is to satisfy myself as to the propriety of giving Mr. Stevens the necessary encouragement on the part of the Institution to commence the preparation of the work. In conformity with the rules adopted, it will not be accepted for publication by the Institution unless it be approved of as to character and execution by a commission of competent judges.

I remain respectfully and truly, yours,

JOSEPH HENRY,
Secretary Smithsonian Institution.

WASHINGTON, *July* 15, 1848.

DEAR SIR: You do me the honor in your note of yesterday's date to re quest my opinion respecting Mr. H. Stevens's plan of "a bibliographica account of books relating to, or printed in America prior to the year 1700."

Mr. Stevens has, as you understand, been so kind as to acquaint me with the details of his plan. I take great interest in its success. Executed in the manner in which it will be by Mr. Stevens, the work will, I conceive, constitute a contribution to our literature, of great value, and richly deserve a place in the series of volumes proposed to be issued by the Smithsonian Institution.

I have the honor to be, dear sir, with great respect and esteem, your obedient servant,

JOHN G. PALFREY.

Prof. J. HENRY.

WASHINGTON, *July* 15, 1848.

MY DEAR SIR: I have examined Mr. Stevens's plan for a Bibliographia Americana, and believe it to be an excellent one. * * * *

As an evidence of my belief in the importance of the work and of Mr. Stevens's qualifications for preparing it for the press, I may refer to the fact that I have subscribed two hundred and fifty dollars towards it upon the terms detailed in Mr. Stevens's prospectus.

Yours, very truly,

PETER FORCE.

Prof. JOSEPH HENRY,
Secretary of Smithsonian Institution.

CAMBRIDGE, *July* 24, 1848.

MY DEAR SIR: You ask my opinion of Mr. Stevens's plan of a bibliographical account of books relating to America, and of those printed in America prior to 1700. Having examined his plan, and from the nature of my studies having attended much to this subject, I cannot hesitate to express the belief that such a work completely and faithfully executed, would be a most important acquisition to our historical literature. He proposes not only to give the titles of the books, but to inspect every work, and to add bibliographical remarks to such as require illustrations of this kind, and moreover to indicate the principal libraries in which they may be found.

Many of these books are extremely rare, and are scattered in various libraries. I think it may be with safety affirmed, that not a single work on the first settlement and early history of any one of the old States has been written with the use of all the books relating to the subject; first, because in many cases, the authors did not know of the existence of the books; and secondly, because when they possessed this knowledge they had no means of ascertaining where the books could be found. Hence all the books relating to our early history, written in modern times, are more or less defective and erroneous, even where the authors have done their best to secure fullness and accuracy. It is easy to perceive what advantage these writers would have derived, and the public through them, from a work like the one proposed.

For use in libraries it will also be of great value, serving not only as a catalogue of all the books relating to America in any library, but likewise of all in which it is deficient, thereby enabling librarians to ascertain this deficiency at a single glance, and to supply it as occasions may arise.

If I may judge from my own experience, the want of such a book is more extensively felt than may at first be imagined. During the last few years I have had innumerable applications from persons making historical researches in various parts of the country, requesting me to point out materials and their sources.

Mr. Stevens possesses uncommon facilities for executing the task. He has been educated at one of our principal universities, and his employment in collecting and purchasing this class of books for the British Museum, and other libraries, has given him a practical knowledge essential to this undertaking, and which can scarcely be attained by any other individual, as the same combination of circumstances is not likely again to occur.

The sale of the work must necessarily be limited, and can not possibly pay the cost of preparing it for the press, or of its publication, and I think I am not deceived in the impression, that few works in the literary class are more worthy of the patronage of the Smithsonian Institution, or more in accordance with its original design.

I am, dear sir, with great respect and regard, very truly, yours,

JARED SPARKS.

JOSEPH HENRY, LL. D.,
Secretary of Smithsonian Institution.

SENATE U. S., *August* 4, 1848.

DEAR SIR: Mr. Stevens's prospectus of his Bibliographia Americana has been submitted to the Joint Committee on the Library. They approve his plan, and thinking it worthy of such encouragement as they can give, have subscribed two hundred and fifty dollars, on the terms mentioned in the prospectus, it being also understood that for this sum he will catalogue such books on America, in the Library of Congress, as are within the period proposed by him.

Very respectfully, your obedient servant,

J. A. PEARCE.

ANTIQUARIAN HALL,
Worcester, September 23, 1848.

DEAR SIR: I addressed a line to Mr. Stevens some weeks since, informing him that the council of the American Antiquarian Society would subscribe two hundred and fifty dollars towards the expense of preparing his Bibliographia Americana. Yesterday I received his acknowledgement, in which he expresses his satisfaction with the amount, and states that the work meets with every encouragement he could wish; the subscription having nearly reached the sum of five thousand dollars.

I presume this contribution by the council of the Antiquarian Society will be regarded as the best evidence of *their* estimate of the importance of the proposed work, and of their confidence in the manner of its execution under the patronage and supervision of the Smithsonian Institution.

Very respectfully and truly yours,

SAML. F. HAVEN.

Prof. JOS. HENRY.

APPENDIX B.

To the Regents of the Smithsonian Institution:

GENTLEMEN: The apparatus for the purpose of scientific illustration and investigation which I had been for many years accumulating while occupying the chair of chemistry in the University of Pennsylvania, on my retiring from that office was replaced by another apparatus belonging to my

successor. Under these circumstances, I signified my willingness to bestow mine on any institution for the promotion of science which would give it suitable apartments and cases, so as to have it kept in due order, and to render it available for the advancement of scientific knowledge.

Subsequently, Professor Henry, the distinguished Secretary of the Institution over which you are the legitimate guardians, suggested to me that I should offer my apparatus to that Institution in the following complimentary language: "I hope you will conclude to present it to the Smithsonian Institution. Several of the articles belong to the history of the science of our country, and would be interesting mementos of the past which should be preserved in some public institution." In reply, I wrote informing him that it would be agreeable to me to comply with his proposal, it being understood that the cost of the removal of the apparatus and of its being put in good order should be defrayed by the Institution, so that while, on the one hand, I should receive nothing, on the other, I should not be at any expense; also, that suitable apartments and cases should be provided for the keeping and using of the apparatus for the purpose of investigation and illustration.

Having been subsequently advised that you were willing to do me the honor of accepting the apparatus on these terms, I put it at the disposal of the Secretary, leaving it to his discretion to reject all that might not be considered of use to the Institution. I did not deem it proper that I should determine how far articles, which I had preserved under the idea of a contingent utility, might be worthy of the cost of transportation and of the space which they would occupy in the buildings of the Institution. I understand that Professor Henry gave to Mr. De Beust, for many years employed as my laboratory assistant, directions to pack up all that might, in his opinion, be useful in the way of research or illustration.

Agreeably to these directions, the apparatus was packed up last summer during my absence. I owe it to myself to state these circumstances, as it may happen that every body may not consider all the articles packed up by my assistant as meriting the honor done to them by their transfer to the halls of the Institution.

I am, gentlemen, very respectfully, your obedient servant,

ROBT. HARE.

WASHINGTON, *January* 3, 1848.

APPENDIX C.

Extracts from Communications from Professor Guyot to the Secretary of the Smithsonian Institution.

There is no man of science who does not deplore the want of uniformity in the scales of scientific instruments adopted by different civilized nations. The comparisons between the observations, made in different countries—comparisons indispensable in establishing the general results to which meteorology aspires—are at present impossible, except by means of reductions, which are a source of errors in calculation, (against which it is difficult to guard,) and which impose heavy labor and a considerable loss of time. It is therefore very desirable, for the interest of meteorology, that a uniform system of annotation should be established.

Of the three systems now in use for thermometric and barometric scales, (the Reaumur and the French inch, the Fahrenheit and the English inch, and the centigrade with the millimetre,) that to which preference is generally given on the continent of Europe, is the centigrade and the metric system. Germany is gradually abandoning the Reaumur division and the French inch for the centigrade and the millimetre. In some of its most important scientific works, as the Meteorology of Kaemtz, several memoirs of Dove, the Physical Atlas of Berghaus, and the accompanying text the latter have been adopted. By degrees, Italy is doing the same, and we shall soon have for choice only the Fahrenheit and the English inch on one hand, and the centigrade and the millimetre on the other.

But to which of these two systems ought we to give the preference? I do not hesitate to say, to the second. It is the most rational and the most convenient, it is that which has the greatest chance of uniting all suffrages and of becoming universal. But it is reserved to America to settle this question. Her weight in the balance will be decisive. If, renouncing the system she has inherited from England, she adopts the centigrade and metric scales, the scientific world may hope soon to arrive at that uniformity in measures so desirable. England would not be able to hold out long alone.

It would be worthy of the Smithsonian Institution, which owes its origin to a love of science transcending all spirit of nationality, to take here the initiative, which its position, so perfectly independent, permits. The adoption of these scales for the numerous instruments, which it intends to spread over the whole surface of the United States, together with the regular publication of observations under this form, will soon compel all observers to conform to it. I am not ignorant of the objections which might be urged against this measure, nor do I undervalue them. Nevertheless, I believe that I should be able to meet them, and I would do so in advance, did I not fear to extend this communication beyond suitable limits.

The co-operation of Professor Bache would be of very great importance. As superintendent of the coast survey, he has a number of publications to make on the temperature of the sea at different depths, for example, and others, for which it would be useful to adopt the centigrade scale, or at least to place the centigrade opposite to the Fahrenheit degrees. This scientific authority, joined to that of the Smithsonian Institution would, I doubt not, be sufficient to introduce gradually so desirable a reform. The moment is critical—later, a change would be almost impossible.

* * * * * * * * *

The importance which the subject of the change of scales seems to me to possess, and the exigency of the moment, induce me to offer some further considerations thereon, for which I crave your indulgence.

Uniformity of notation in all scientific works is the essential and immediate result at which we should aim. We might, strictly speaking, admit any scale, provided it were universally adopted; but since, among the number of those which have been proposed, there are three which have divided the suffrages, it is from among these that we should select. Other things being equal, two reasons (as I have already remarked) it seems to me should determine our choice; the first is the relative perfection of the scale; the second is the probability of its adoption by all men of science.

As to the first point, the centigrade scale has the advantage over the

two others of being in harmony with the decimal system, and of facilitating calculations. It has the advantage over the Fahrenheit of possessing a natural zero, a point of departure fixed by nature herself, easy to determine, and which corresponds to a point of temperature so critical, that from the moment of reaching it, meteorological phenomena are suddenly and profoundly modified, vegetation ceases, and all nature assumes another aspect. It is then highly proper that this temperature, which is a point of change marked by nature herself, be also the principal one on the thermometric scale.

The English adduce, as one of the reasons which causes them to retain the Fahrenheit scale, the absence of negative quantities. This, it is true, is an advantage; for I admit that the mixing of negative and positive quantities is a source of error, and embarrasses the calculation. But this advantage, which is real, disappears the moment we wish to make a universal one of the Fahrenheit scale, for in nearly half the countries of the earth, and particularly in North America, the Fahrenheit thermometer furnishes every year many negative quantities. It has been said further, that the Fahrenheit degree, measuring a smaller difference of temperature, allows of a more exact reading than the centigrade. But it is only requisite to mark half degrees upon the centigrade scale in order to obtain, the tubes being equal, a still greater approximation, that is to say, according to the ordinary method of estimation of twentieths of degrees; which is much more than it is right to demand of instruments destined for meteorological observations, since various causes prevent, even with the best, that one could guarantee the temperature of the air within two or three tenths of a degree.

But the strongest reasons for the adoption of the centigrade scale are, without contradiction, the predominance already secured to it in the greater part of the scientific world, the considerable amount of meterological labors in which it is employed, and the decided tendency continually to extend itself. America has not here to open a new path, she has only to associate herself with the movement which is carrying scientific Europe along with it. But I repeat, her influence will be decisive, she holds in her hands the future, and if she well understands her part, here as in other domains, she should break with the past in its narrowness, and render herself cosmopolitan in the interest of general utility.

What I have just said applies equally to the barometric scale. The metrical scale is the most convenient; it is rational, easy to verify, invariable; it has also the future in its favor.

There remain to be considered material difficulties which attend every change of system. I will take the liberty of calling your attention to the fact that they only concern other institutions. The Smithsonian Institution is perfectly free to take the course which may seem to it most in accordance with the interests of meteorology. It has, moreover, a right here to an influence proportioned to its expenditures in this department. If, for example, it takes upon itself the gratuitous publication of the observations made in stations already existing, may it not in time claim to regulate also the form of these observations.

Besides, the question is not about changing at once the habits of the people, put simply those of scientific observers, which is a very different affair. The detailed publication of the observations will principally circulate in the scientific world for which it is designed. But nothing would pre-

vent the publication, for some time to come, of reports of general results, with the old scales opposite the new.

I am, sir, your very obedient servant,

A. GUYOT,

JOSEPH HENRY, LL. D.,
Secretary of the Smithsonian Institution.